

ST. BARTHOLOMEW'S HOSPITAL JOURNAL



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EDITORIAL

The Centenary of the Fountain is an important event for Bart's men, for there can be little doubt that it is an influential symbol hardly less powerful than the zodiac. That the Fountain lies at the hub of the Hospital is true, but it is a still greater truth to say that the Hospital stands "Round the Fountain"—an expression which no one can avoid. The alpha and omega of events at Bart's are the Fountain: that distinguished band of gentlemen who dine together have chosen for themselves the title of the Fountain Club; the Journal published its best humour in "Round the Fountain"; what has not happened "Round the Fountain"—who knows?

The Journal is strangely lacking in references to the Fountain, and consequently interest has been kept alive by a considerable mythology broadening and changing with time, and playing with man as if of trifling importance. Some incidents are recorded in Dr. Bourne's article elsewhere in this Journal. Life in the Fountain continues to reproduce itself, or at least, should do so according to Professor Garrod in his correspondence with Mr. Carus Wilson and A. Fish (December 1955). His magnanimity in presenting two goldfish was intended for the preservation of the species, but even Professor Garrod, with his "greater biological experience" (to quote Mr. Carus Wilson)

could not tell the two apart. The goldfish of the 1930's were more successful in their attempts and succeeded in increasing many-fold over night—although perhaps not quite so naturally as some were expecting at the time.

Yet the procreation of the race is of no small importance in a community in which conditions are by no means always favourable, for example, when the aesthetic enhancement of the Fountain by the addition of gentian violet was accompanied by at least one fatality. Worse, however, was the occasion of which A. Goldfish complained to the Journal in March 1955—as described by the poet Hogarth previously in the Journal on the occasion of the Residents' Dinner:

*Some returning from the fray
Joyfully vomit in the passage way:
Others with shrieks torment th'indignant
air
And micturate upon the fountain in the
square—*

... a tiresome hazard, as Mr. Goldfish remarks!—and indeed in this matter he is in agreement with Hesiod who (as early as the 8th century B.C.) begged that fountains should not be used as public conveniences—"but rather avoid doing so . . . for it is not good." On other disturbances Mr. Goldfish felt that his "gills must remain sealed"—but

the man who swam three laps has not been forgotten, nor has the houseman who was not considered to come up to the Bart's standard of cleanliness. Is this the origin of the traditional immersion of the captain of rugger?

There may be many possible uses for a Fountain: immersion is probably one, but the earliest Fountains of the Romans had the much more common-place purpose of providing water-heads to supplies which often came from far away. They were very proud of their water and it was a mark of distinction to cultivate the art of water tasting. This does not mean that they had no palate for anything stronger, and indeed on important state occasions their fountains flowed with wine. Neither were they the only nation to follow this custom. Goethe (in his autobiography) records that at the Coronation of the Emperor Joseph in 1764 a fountain was erected at Frankfurt which "had a basin on either side, and in the middle the two-headed imperial eagle spouted white wine into one basin and red wine into the other." Even in our own beer-drinking country, a fountain in Cheapside is reputed to have flowed with wine at the Coronation of Richard II. The Editor of the Journal in 1953 must have known of these precedents when in his Editorial (March) he recom-

mended charging "the reservoirs with something a little more potent" to celebrate the Coronation of Her Majesty. The success of the Fountain Club's recent celebrations on October 8th was noticed, but the source of their champagne was unfortunately not the Fountain.

The occasion of this Centenary calls for one final comment on the Fountain with regard to its state of cleanliness. The cleanliness of housemen may have been doubted, but there is no question about the appalling state the Fountain had fallen into. It may be that Wordsworth's lines are true—

*Pure Elements of waters ! whereso'er
Thou dost forsake thy subterranean
haunts,
Green herbs, bright flowers, and berry-
bearing plants
Rise into life and in thy train appear . . .*

but the only effect in this case is to give the Fountain an aura of neglected old age. Its illumination on the occasion of the Fountain Club's celebration was pathetic. We hope that we will not have to wait long to see some improvements.

All the same, it would be almost true to misquote H. V. Morton's description of Rome, and say that "the sound of Bart's is the whisper and fall of her Fountain".

THERAPEUTIC ABORTION

Elsewhere in this issue appear three articles on various ethical approaches to therapeutic abortion by representatives of the three religions predominant in the Western Civilisation. It is interesting to see these articles side by side and to observe the range of views. That they all have views on the matter is to be expected, because all physicians or surgeons must always weigh the pros and cons of any mode of treatment before it is applied, and it is rejected if the risks outweigh the chances of success; the guiding principle is common sense with regard to the *Life* of the patient. That experienced doctors may disagree about the value of certain procedures is also to be expected because of insufficient scientific evidence, and each man must act according to his own opinions which he has formed from his own experience.

The particular case of therapeutic abortion

is no exception to these principles. Religious bodies differ in their views not because their medical principles differ from each other or from anyone else, but because each regard intra-uterine *Life* in a different way. There is no disagreement that a therapeutic abortion usually involves the *active* destruction of a *Life*; if the case were as simple as this, there would be no argument, and this therapeutic measure could not in general be tolerated, and this in fact forms the essence of the Roman Catholic view. But the Jewish view, for example, discusses the question with the concept of a range of *values of Life*, and the justification for therapeutic abortion in certain instances is on the grounds that the foetal life is of *inferior value* to the maternal life (morally speaking). The Anglican view on the other hand, does not consider such a range of values, but justifies the procedure in some cases because it holds that there are

implied exceptions in the Old Law regarding the sanctity of human life which have not been countered in the New Testament.

Clearly there is considerable scope for discussion of this very important topic, and it is hoped that readers will enter into this by sending their letters to the Editor. It is an opportunity for each to express an opinion and to indicate that their views are of value and worth consideration.

Tell the Public?

It is interesting to notice that the controversy of whether to tell the patient about his cancer or not has been resurrected after only a very short silence (extensive correspondence followed the article in the B.M.J. by Jean Aitken-Swan and E. A. Easson on March 21st). The pros and cons for both points of view have been aired often enough for us to draw the conclusion that no rules can be laid down, and each case must be judged according to its individual merits.

The difference about the present controversy is that it has been brought to the notice of the public, and has been discussed in the national press. Publicity of this kind cannot conceivably do any good and more probably does considerable harm. "Cancer education" may have some value, but to discuss in public whether or not people should be told, can only fill every mind with the terrible fear that no matter what the truth is, they will never know it, and nothing is worse than to live under a pall of uncertainty. Surely such problems should be restricted to the professional journals, which can and do give ample coverage to this kind of problem.

Fifty Years Ago

The army features large in this edition of the Journal. The Editor urges all freshmen to join the O.T.C. and refers them to an article by one of the officers on the first summer camp held by the University of London O.T.C. on Salisbury Plain. A brief computation made from the data given reveals that the Medical unit did 5½ hours drill per day including half an hour before breakfast. One doubts if this did much to encourage prospective members of the Corps! Far more attractive is another notice which recommends qualified men to serve with the R.A.M.C. Special Officers Reserve:

... "conditions are easy, the service voluntary and the officer can resign whenever he settles down, and finds that he cannot continue in the Reserve."

It is, however, noteworthy that at this date the authorities were anxious to have "trained officers to depend upon in the next war" and to avoid the situation in the Boer War when untrained civilians had to be enlisted.

New methods of treatment at Bart's had recently been much discussed in the "half-penny press" and the Hospital was inundated with patients wishing to try the new electrical treatment for rheumatoid arthritis. The use of bee stings in some of our wards for the treatment of the same condition had apparently produced a somewhat extravagant cartoon in one of the cheaper papers.

From "*The Battle of Furunculus*:

"The septic hosts of cocci
Advanced in serried ranks,
They marched upon the Blood Stream
And camped upon its banks:
Forth flew the watchful blood-cells
Crying in wild turmoil:
'Staphylococcus Aureus
Has come and raised a boil!'"

Abernethian Society

The first meeting of the session held on 15th October introduced three very distinguished men—Dr. Melrose, Mr. Bentall and Mr. Cleland, whose recent trip to Russia to demonstrate the technique of open-heart surgery was an outstanding success. It was interesting to hear of the decreasing tension within the nation; the group was invited to the May Day celebrations held within the Kremlin, and (more remarkable still) allowed to take photographs—which were included in the many slides shown to the audience; even the rule which does not allow photographs of dinner parties at which vodka bottles are to be seen, was relaxed.

Impressions of Russian medicine were very enlightening. Research is in many ways very progressive, though apparently not always directed in the right direction, for example, in the grafting of animal's own limbs after they have been amputated. However, the development of machines for performing surgical operations seems remarkable, and demonstration to the group of five major abdominal operations on dogs,

completed in 25 minutes seemed almost beyond a reality. As for the practice of medicine itself, superspecialism seemed to be the keynote, and while one man may listen to the heart, another deals with the E.C.G., and so on. Nursing, as known here in England, seemed to be entirely absent, and the house-surgeon performed many of the tasks which would here be the work of nurses; the absence of meticulous post-operative care made one wonder just how successful open-heart surgery would prove to be.

It was certainly interesting and to their credit that the idea of extracorporeal circulation came from a Russian as early as 1925.

Congress of Haematology

The Seventh European Congress of Haematology convened on the 8th September at Bedford College. In this delightful setting, approximately three hundred and fifty papers were read in the five days. St. Bartholomew's was extremely well represented, both among the contributors and the delegates. In all, over a thousand members attended the Congress. Unfortunately, however, few appeared able to travel from Eastern Europe. We were pleased to welcome among the distinguished visitors from overseas, Professors Dameshek, Finch, Owren and Heilmeyer and Doctors Dausset, Di Guglielmo, Mathé and Bernard.

All branches of Haematology were represented in the scientific programme. The papers being simultaneously translated into each of the three official languages of the conference and relayed over head phones. We learn, that two thirds of all pregnant women in the third trimester show signs of Folic Acid deficiency, of the development of anti B12 substances, and of the continued failure to find biochemical differences between normal and cancer cells which could be exploited for rational and effective therapy. Bone marrow transplantation both in animals and human beings was discussed. The main difficulty remains the control of the immune reaction evoked by the homograft. A symposium on the clinical use of Anti-haemophilic globulin confirmed the limitation on the use of non-human A.H.G., also due to acquired immunity and revealed a discrepancy between the efficacy of the English and Swedish human preparations.

Genetically determined enzyme defects of red cells are gradually being elucidated, the

best established to date being Favism, hypersensitivity to sulphonamides, and Hereditary Spherocytosis. The abnormal haemoglobins continue to increase in number and complexity. Considerable progress is being made in their chemical analysis. The great variations possible in the Thalassaemia syndromes were brought to our notice together with their not infrequent occurrence in Britain.

In addition to the scientific meetings, an excellent social programme was arranged receptions being given by the Minister of Health, London University, The Royal Colleges of Physicians and of Surgeons and by the B.M.A. The Ladies' programme included visits to some of the leading London shops, Windsor, and Greenwich, and a Beer and Cheese party held in the Apothecaries Hall, for the succour of many thirsty delegates.

The weekend Air liners were filled, I have no doubt, by relaxing Haematologists dreamily planning further research, after a very enjoyable, stimulating and excellently organised Conference.

J.Q.M.

Transatlantic Visitors

During the months of July, August and September the Hospital was pleased to welcome four visitors from the United States; these were Mr. H. Christensen and Mr. J. Shaw from Stanford University, Mr. J. Larkin from the University of Minnesota and Mr. S. Tuffle from the University of Pennsylvania. All four are taking advantage of the U.S. system of medical education which allows three months in the final year for research or visiting other universities. Mr. S. Tuffle was here under an exchange scheme, but the other three came over independently. Mr. Christensen and Mr. Shaw are spending the next three months on the continent and Mr. Christensen hopes to be back for Christmas. An article by Mr. Christensen on medical education in the U.S. will be published soon.



Rowing

The United Hospitals Rowing Club Winter Regatta is to be held on Wednesday, November 25, at Putney. The Boat Club Dinner will be held in the evening. All support will be most welcome, and those who wish to attend the Dinner are asked to contact the Secretary (W. S. Shand).

Research in the Department of Biochemistry

by PROFESSOR A. WORMALL

Our research interests are widespread and our main studies can best be subdivided as follows: immunochemistry; zinc and cancer; nitrogen and sulphur mustards; radiobiological studies; and skin biochemistry.

Immunochemical Studies

Full antigens, i.e. foreign substances which, when introduced into the animal body cause the body to produce specific antibodies against them, are usually proteins or contain proteins. Antibodies also are proteins, for it has been established that they are gamma globulins with groups which can specifically react with, and in many cases cause precipitation of, the corresponding antigen. When antibody and antigen react, it is very difficult to study this interaction between two proteins unless at least one of the reactants possesses a suitable label; this may be a fluorescent compound or a radioactive or stable isotope. We have found isotopes most useful in the labelling of antibodies or of protein antigens such as bovine serum albumin or ovalbumin^{1, 2, 3, 4}. The radioactive isotopes which we use for this purpose are iodine-131, phosphorus-32, carbon-14 and tritium (hydrogen-3), and using labelled antigens and antibodies we have been able to measure the amounts of antigen and anti-body present in small amounts of serological precipitates. We have also studied the fate of injected labelled antigens, for we want to know what happens to antigens after they have entered the body. We have confirmed that specific antibodies in the blood stream are directly concerned with rapid removal of protein antigens which have entered the blood stream¹², but we want to know more about the subsequent fate of these antigens or antigen-antibody complexes.

We have also found that in the "immunised" rabbits, i.e. those which have received injections of protein antigens, a significant fraction of the antibody present in the body is present in tissues other than blood¹³, but the location of these non-circulating antibodies has not yet been fully established.

These immunological investigations have been carried out by Dr. Francis, Dr. Hawkins, and myself, and we are continuing to

study, with isotopically labelled antigens, the way in which the body deals with foreign antigens and the mode of action of specific antibodies on these antigens. We are also interested in antibodies to some enzymes (including urease and alcohol and lactic dehydrogenases) for we want to know whether the active centres of the enzymes are also concerned in the specific immunochemical reactions of these proteins.

Another of our immunochemical interests is complement; — a keystone in the immunity defence system of the body, and the system which Dr. Michael Heidelberger has referred to as 'Immunity intensifier, diagnostic drudge, and chemical curiosity'. Here again, isotopic labels have proved very useful, and Dr. Hawkins is continuing his research, part of which he carried out with Professor Haurowitz at the University of Indiana, on the use of labelled complement for studies on the binding of complement by antigen-antibody complexes. In these experiments, amino acids tagged with carbon-14 or sulphur-35, are injected into guinea pigs and these animals utilise the labelled amino acids to synthesise labelled complement.

Zinc and Cancer

One of our earlier hopes was that it might be possible to find some radioactive substance which could be specifically deposited in tumour tissue. Our object was to obtain specific deposition in tumour tissue of some isotope which would emit radiation which would have a local but not general damaging action. Like other workers in this field, we may have been looking for the impossible, but at least it was an experiment well worth trying. We have found, using as tracer a radioactive isotope of zinc (zinc-65), that the intravenous injection of a zinc dithizone compound into mice leads to the deposition of about twice as much zinc in spontaneous mammary tumours as in the normal mammary tissue, but this difference is too small to be of value for therapeutic radio-logical purposes.

For other reasons, Mr. Tupper, Miss Dennes and I are interested in the 'metabolism' of zinc in normal and pathological tissues. It has been reported by workers in the U.S.A. that the leucocytes from

leukaemic patients contain less zinc than do the leucocytes of normal subjects. We have been engaged for some time in the study of this problem, and we should like to be able to identify the zinc compounds, possibly zinc-enzymes or other types of zinc containing proteins, in human leucocytes.

For these studies it was necessary for us to devise a method for estimating accurately the amount of zinc in small samples of blood and blood cell suspensions, and in collaboration with Dr. T. E. Banks (of our Physics Department), we have developed a method of zinc determination by neutron activation analysis which is admirably suited for this purpose⁶. It renders possible the estimation of the extremely small amount of zinc present in 2 or 3 drops of blood (100-150 mg. of blood) or the leucocytes separated from 4 or 5 ml. of human blood. Amounts as little as one-hundredth of a microgram of zinc can be detected, and accurate estimations can be made of amounts as little as one-tenth of a microgram; it should be remembered that one microgram is one-millionth part of a gram. In this method, we introduce a measured amount of blood or separated leucocytes into a small polythene pill pack. The sample is dried and batches of these pill packs containing blood samples are sent to Harwell. There they put the samples in the atomic pile (usually B.E.P.O.) and irradiate them with neutrons for 28 hours, during which period the zinc in the samples is converted into radioactive isotopes of zinc (mainly zinc-69). Several other radioactive isotopes are produced from sodium and other elements in the sample, and the material coming back to us from Harwell is quite 'hot' in a radiochemical sense.

As I write these lines, we have just received from Harwell, brought by special speedy road transport, a can containing the irradiated blood samples, which we shall now work up for radioactive zinc measurements.

We measure how much zinc-69 is present in each sample and in some similarly irradiated samples of known amounts of zinc salts, and from the results we can calculate the amount of zinc present in the original blood samples sent to Harwell. We expect the amounts to correspond to 1-2 micrograms for whole blood samples (about 0.2 ml.) and 0.2-0.6 microgram for the leucocyte samples (10^7 - 10^8 leucocytes per sample, or the amount separated from about 4ml. of

blood from a normal individual or a leukaemic patient). Obviously this work is tedious, and it will be a long time before we have collected all the data we require. However, we have done sufficient of these determinations to be able to state that all the leukaemic leucocytes we have studied contain less than half as much zinc as do normal human leucocytes.

There is no evidence that this 'deficiency' in the leukaemic leucocytes is due to a deficiency of some zinc compound essential for the metabolism of normal leucocytes, but at least this possibility should be given further consideration. For our investigations we have already enlisted the aid of some of our preclinical students, for we have persuaded them to give small samples of their blood for our determinations of the amount of zinc in their leucocytes, and we hope that this short explanation of the objects of our work will help to explain why we have appealed for normal blood samples. We also require normal samples of human serum for other related investigations.

Some workers in London have reported that in leukaemia the serum contains a relatively large amount of a substance (possibly a histidine-like substance) which can be detected and measured by a 'diazo test', i.e. a reaction with a diazo compound to give a pink colour, which can be measured colorimetrically. We have strong evidence that when zinc is attached to proteins, it is the histidine groups of the latter which are predominantly concerned with the binding of the zinc. Thus, histidine-containing compounds in the serum might obviously play a role in the control of the zinc metabolism of leucocytes, bone marrow and other tissues, and we are now investigating this diazo reaction which has been described by the authors as a serum test for neoplasia.

Skin Biochemistry

In 1950, Dr. MacKenna and I started organising research in skin biochemistry as a joint effort from the Departments of Dermatology and Biochemistry, and this research, in which we have had the help of Dr. V. R. Wheatley and Dr. Barbara Boughton, has attracted considerable attention in the U.S.A. and many other countries. Indeed, such was the interest of the Americans in this work that a few years ago two of their Universities held out very attractive offers to Dr. Wheatley, and ultimately he left us to take up a senior post at the University of

Chicago. Since then, he has moved on to Stanford University, California, to help them to organise research on skin biochemistry. Because of lack of funds, our College has been unable to finance our own research in skin biochemistry, and for the present these researches have had to be stopped.

Many of our present clinical students will probably remember occasions a few years ago when they volunteered to shed their surface skin fat (sebum) for our research, and they might like to know that their valuable co-operation enabled us to collect sufficient material for our chemical investigations and for the carrying out of some preliminary clinical tests. Alas, normal sebum collected from the forearms of medical students did not possess any detectable curative action (nor did squalene or shark liver oil) when applied to the skin of patients suffering from seborrhoeic dermatitis, psoriasis, eczema and certain other skin disorders.

Our first major task was to undertake a full chemical analysis of normal human sebum, and this was successfully accomplished^{5,7}. This fatty secretion or excretion contains fats, free fatty acids, waxes, and, as we were surprised to find, an appreciable amount of squalene, an unsaturated hydrocarbon which hitherto had largely been known as a major constituent of some shark liver oils.

Subsequent to our discovery of squalene to the extent of 5-10 per cent in sebum, other investigators (in the U.S.A. and in London at Mill Hill and Hammersmith) studied the metabolic significance of this hydrocarbon and established that it is an important intermediate in the formation of cholesterol in the animal body.

Incidentally, our observation that squalene is a normal constituent of sebum led some American workers to report that it possesses marked depilatory activity. Our experiments did not confirm this observation, but since a depilatory which is a normal constituent of body tissues might have great possibilities in the world of commerce, we took early steps to obtain very considerable supplies of shark liver oil. If necessary, we could have separated the squalene, which accounts for about 40 per cent of some shark liver oils, and have supplied it as a harmless depilatory. Our experiments⁷—with man, rabbits and certain other animals showed, however, that the depilatory action was not greater than that of paraffin oils and of cer-

tain commercial hair tonics, so that was the end of that dream.

Using the recently developed method of gas-liquid chromatography devised by James and Martin, we have also been able to study the free fatty acids in very small samples of sebum, with the object of finding whether there is any abnormality in the types of fatty acid secreted in the sebum of patients suffering from acne, seborrhoeic dermatitis, etc. Our investigations have failed to reveal any regular abnormality in sebum composition in these diseases^{8,9}. We also found, using rats as our experimental animals, that the feeding of chocolate and pork fat, foods which are believed to aggravate acne vulgaris, do not cause any alteration in the general composition of the sebum secreted.

Nitrogen Mustard

For the past few years we have been studying the action of nitrogen mustard on proteins and other body constituents, and for these studies we have synthesised nitrogen mustard containing a radioactive isotope (carbon-14 or tritium) or a stable isotope (nitrogen-15). This radiomimetic drug has a marked reactivity towards, and combines with, nucleoproteins and practically all other proteins¹⁰, and our results indicate that after intravenous injection into man and other animals, the drug does not remain long in the blood stream.

Radiobiological Studies

In collaboration with Professor Rotblat, we have found that the exposure of serum to moderately low doses of X-rays and electrons causes a marked destruction of the haemolytic complement of the serum, detectable destruction being observed with diluted serum exposed to doses of 500 rads¹⁴.

We are now studying the action of ionising radiations on proteins, including the enzyme urease. One of our objects is to study the effect of X-rays, etc. on the biologically important SH groups. Dr. Wills is also continuing his studies¹¹ on the effect of X-rays on the production of peroxides from unsaturated fatty acids, and the effect of these peroxides on SH-enzymes.

References

Reviews, monographs, etc.

1. G. E. FRANCIS, W. MULLIGAN, AND A. WORMALL (1959) "Isotopic tracers". 2nd Ed. London : Athlone Press.
2. G. E. FRANCIS (1953). "The use of

- isotopes in immunology." *Biochem. Soc. Sym.*, No. 10, p. 49.
3. A. WORMALL (1948). "Contributions of chemistry to the problems of immunology." *Brit. med. Bull.*, 5, 333.
 4. A. WORMALL (1955). "The use of radioactive isotopes in immunology." *Brit. J. Radiol.*, 28, 33.
 5. V. R. Wheatley (1953). "Some aspects of the nature and function of sebum." *Bart's Hosp.*, J., 57, 5.
- Some other publications*
6. T. E. BANKS, R. TUPPER, E. M. A. WHITE AND A. WORMALL (1959). "Micro-determination of zinc in blood and other tissues by neutron activation analysis." *Internat. J. Appl. Rad. Isotopes*, 4, 221.
 7. B. BOUGHTON, R. M. B. MAC-KENNA, V. R. WHEATLEY AND A. WORMALL (1957). "Studies on Sebum. 8. Observations on the squalene and cholesterol content and the possible functions of squalene in human sebum." *Biochem. J.*, 66, 32.
 8. B. BOUGHTON, R. M. B. MAC-KENNA, V. R. WHEATLEY AND A. WORMALL (1959). "Fatty acid composition of surface skin fat (sebum) in acne vulgaris and seborrhoeic dermatitis." *J. Invest. Dermatol.*, 33, 57.
 9. B. BOUGHTON AND V. R. WHEATLEY (1959). "The fatty acid composition of skin surface fat (sebum) of normal human subjects." *J. Invest. Dermatol.*, 33, 49.
 10. V. C. E. BURNOP, G. E. FRANCIS, D. E. RICHARDS AND A. WORMALL (1957). "Studies with 15N-labelled nitrogen mustards. The combination of di-2-(chloroethyl) methylamine with proteins." *Biochem. J.*, 66, 504.
 11. M. E. CLUBB AND E. D. WILLS (1959). "The effect of irradiation on unsaturated fatty acids and sulphhydryl enzymes." *Biochem. J.*, 71, 16P.
 12. G. E. FRANCIS, J. D. HAWKINS AND A. WORMALL (1957). "The use of radioactive isotopes in immunological reactions. 10. The fate of some intravenously injected native proteins in normal and immune rabbits." *Biochem. J.*, 65, 560.
 13. G. E. FRANCIS AND J. D. HAWKINS (1958). "The use of radioactive isotopes in immunological investigations. 13. The role of leucocytes and non-plasma antibody in the removal of antigenic proteins from the blood stream of immunized rabbits." *Biochem. J.*, 69, 287.
 14. P. J. HANDOLL, J. ROTBLAT, E. D. WILLS AND A. WORMALL (1956). "Effects of ionizing radiations on serum complement and enzymes." *Nature*, 178, 307.

FORTHCOMING EVENTS

General Practice

On Thursday, November 26, at 12 noon, Dr. Abercrombie will give the next lecture on "General Practice".

"Ruddigore"

The Gilbert and Sullivan Society are to give their annual performance, under the direction of C. A. Hood, at the Gresham Hall on Friday, November 20.

United Hospitals Orchestra

The Orchestra will give its Christmas concert at the Duke's Hall, Royal Academy of Music (near Baker St. Station) on Saturday, December 5.

Rugger Club Ball

The Annual Ball will be held at College

Hall, Charterhouse Square, on Friday, December 4, from 9 p.m. to 2 a.m. Tickets (limited to 120 couples), may be obtained from any member of the Club committee.

Film Society

Continuing the policy of variety, the Society presents "I Vitelloni" (The Spivs), on Monday, 23rd November. Directed by Frederico Fellini, this is an absorbing study of five good-for-nothing young men, living in a small provincial town, whose energy is spent in the pursuit of idleness. The lazy, worthless and utterly contemptible characteristics of the five drones are brilliantly observed, and may give rise to uncomfortable introspection in some members of the audience.

This essay in provincial villainy gained an

award at the Venice Film Festival in 1954.

On Monday 7th December, an old favourite will receive a double showing (at 5.30 p.m. and at 8.30 p.m.). This is "Kind Hearts and Coronets" with Dennis Price as the ingenious Mazzini, murdering a series of eight relatives, all brilliantly acted by Alec Guinness, to achieve his goal of the Duke-dom of Chalfont. Valerie Hobson takes the part of Mazzini's wife and Joan Greenwood, with her imitable husky voice, his mistress.

This is the last show of the Autumn Session, but another series of five films is being arranged for the Winter Session, and these will be announced in due course.

A.P.



CALENDAR

NOVEMBER

- Wed. 25—Soccer v. London Hospital (H).
 Sat. 28—On duty: Dr. E. R. Cullinan.
 Mr. J. P. Hosford.
 Mr. C. Langton
 Hewer.
 Rugger v. U.S. Chatham (A).
 Soccer: A.F.A. Junior Cup.
 Hockey v. U.C.H. (A).

DECEMBER

- Wed. 2—Soccer v. St. Mary's Hospital.
 Sat. 5—On duty: Medical and Surgical Units.
 Mr. G. H. Ellis.
 Rugger v. Esher (A).
 Soccer: United Hospitals Cup.
 2nd round.
 Hockey v. Lloyd's Bank (A).
 Mon. 7—Film Society: "Kind Hearts and Coronets".
 Wed. 9—Soccer v. Charing Cross Hospital (A).
 Sat. 12—On duty: Dr. R. Bodley Scott.
 Mr. A. H. Hunt.
 Mr. F. T. Evans.
 Rugger v. Nottingham (H).
 Soccer: A.F.A. Junior Cup.
 Hockey v. Westminster Bank (H).
 Sat. 19—On duty: Dr. A. W. Spence.
 Mr. C. Naunton
 Morgan.
 Mr. R. A. Bowen.
 Rugger v. Stroud (H).

ANNOUNCEMENTS

Engagements

BLAIR-BRANFOOT.—A marriage has been arranged and will take place shortly between Dr. A. T. Blair and Dulcie Branfoot.

NERNEY-BUNN.—The engagement is announced between Dr. John Michael Nerney and Mary Patricia Russell Bunn.

Marriage

ABERCROMBIE-KIRBY.—On 15th August, George Forbes Abercrombie, B.A., B.Ch. (Cantab.) to Jennifer Elizabeth Dormer Kirby.

Births

BEARD.—On 2nd September, at Singapore, to Jane, wife of Dr. Richard Beard, a son.

BIRT.—On August 25, to Barbara and Michael Birt, a son (Jonathan Paul).

FABER.—On 5th August, to Susan and Dr. Vernon Faber, a daughter (Ruth Grey).

HAYES.—On 6th August, to Susan, wife of Dr. Martin Hayes, a son (Justin).

KIELTY.—On 13th September, to Patricia and Dr. Michael Kielty, a son (Michael John).

TAYLOR.—On 1st August, to Andree, wife of Dr. W. Norman Taylor, a son (Julian Quentin), a brother for Howard, Cherry, Anthea and Charmain.

THOMAS.—On August 7, to Barbara and Dr. Geoffrey Thomas, a son (William Geoffrey), a brother for Elizabeth and Amanda.

Deaths

BARNES.—On 31st August, Dr. Howell Wood Barnes. Qualified 1911.

HAIGH.—On June 18, Dr. Bernard Haigh, aged 80. Qualified 1908.

NEILL.—On 11th August, Dr. Eric James Neill, aged 55. Qualified 1929.

SHUTER.—On 28th August, Dr. George Percy Shuter. Qualified 1893.

STOKES.—On 9th July, Dr. Kenneth Reginald Stokes, aged 58. Qualified 1926.



OBITUARY

Eric James Neill died at Newhaven on August 11, aged 55. He was one of four sons of two doctors, the Rev. Dr. Charles Neill and Dr. Margaret Neill, *nee* Munro. His father and uncle, Balfour Neill, were Caius and Bart's men, but his father—having qualified—left Medicine and Eric grew up in the atmosphere of parish work among working people. He stayed happiest in this throughout his life, so that when his old chief, Wilfred Shaw, told him later how much better he could have done in a London practice he said: "You know, I grew up in a parish and these working people are what I want". His education was at Dean Close School and then, when his father moved, St. Paul's, where he won a classical scholarship to Caius. He played in University Hockey trials and took his Honours Classics Degree, but realised that schoolmastering was not his life and went to his father's hospital. There he qualified quickly, played hockey for Bart's and the United Hospitals, did his House job under Wilfred Shaw, and met his wife. After a short time in Ipswich with her, he settled in Newhaven and worked uninterrupted for 28 years, prevented only by war, illness and death.

At Munich he volunteered for the R.N.V.R. and in 1939 was called up. For the greater part of six years he was at sea with the Fleet Air Arm. To his sensitive nature this was a painful service, long close contact making it harder to bear the inevitable end of many of his airmen. He was never so fully fit afterwards, but stuck closely to his beloved practice, even to the extent of shortening treatment of a disc lesion by almost compelling his neuro-surgeon to do a laminectomy. He worked arduously, for, with his busy practice, he was also Admiralty Surgeon and Agent and Treasury Medical Officer, and it was his duty to meet cross-Channel boats.

He served on Divisional B.M.A. and other Committees and used his great knowledge of local conditions and people forcefully on the Urban District Council. Indeed, he disliked leaving Newhaven and so confined his recreations to tennis and captaincy of the Town Hockey side. His only outside appointment was his London Masonic Lodge, and he passed through its Chair. He loved caravan-

ning holidays, and, most of all, his home. Here, with his wife—who shared his life very fully—he was always waiting to help his people, and his father's ideals were strong in him. Very few have so warm or determined hearts. He brought the resources of British Public School life, Cambridge and Bart's voluntarily to his devoted working people, with no show at all. Deepest sympathy goes to his widow and son. His practice is taken over by his companion in war and partner in peacetime years since, Dr. Ralph Alexander.

W.A.B.



Change of Address

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S. Wales.



Seriously ?

That Western research workers are willing to credit their Russian colleagues with some notable contributions in the study of fats and heart disease may be so, but the reverse is not the case. Professor I. Gurevitch writing in *Klinicheskaya Meditsina* decided that the campaign to reduce fats in the diet is a capitalist plot—"advantageous to the ruling classes, who are at present engaged in lowering the living standard of the masses, in lowering their wages and in raising the price of food and particularly of fat. The masses in capitalist countries suffer from a shortage and not from an excess of fat."

Reported in Time, March 30th, 1959

HISTORICAL DIAGNOSIS

Flavius Josephus, one-time Roman Governor of Galilee, was not a Medical man, but in his works can be found a description of the last illness of Herod the Great.

"From then on the sickness spread through his entire body, accompanied by a variety of painful symptoms. He had a slight fever, an unbearable itching all over his body, constant pains in the lower bowel, swellings on the feet as in dropsy, inflammation of the abdomen and mortification of the genitals, producing worms; as well as difficulty in breathing when lying down, and spasms in all his limbs.

". . . But though he was wrestling with so many disorders he hung on to life, hoped for recovery, and planned his own treatment. . . . The Doctors there decided to warm his whole body with hot oil by lowering him into a full bath; but he fainted and turned up his eyes as if dead. He recovered from the effects of his immersion, only to die five days later."

Suggestions of possible diagnoses would be very welcome. Further "Historical Diagnoses" in this series will be published soon.

A.M.W.

Examinations Results

UNIVERSITY OF OXFORD

2nd B.M. Examination

General Pathology & Bacteriology:

Warr, A. C.

Forensic Medicine & Public Health:

Greaves, C. W. K. H.

Williams, C.

Lane, D. J.

Millward, J.

Special & Clinical Pathology:

Greaves, C. W. K. H.

Williams, C.

Lane, D. J.

Millward, J.

CONJOINT BOARD

First Examination

Pharmacology:

Hijazi, H. K.

Kielty, P. A. M.

Craggs, J. C.

Pemberton, M. J.

Chawner, J. M.

Childe, M. W.

Chambers, R. J.

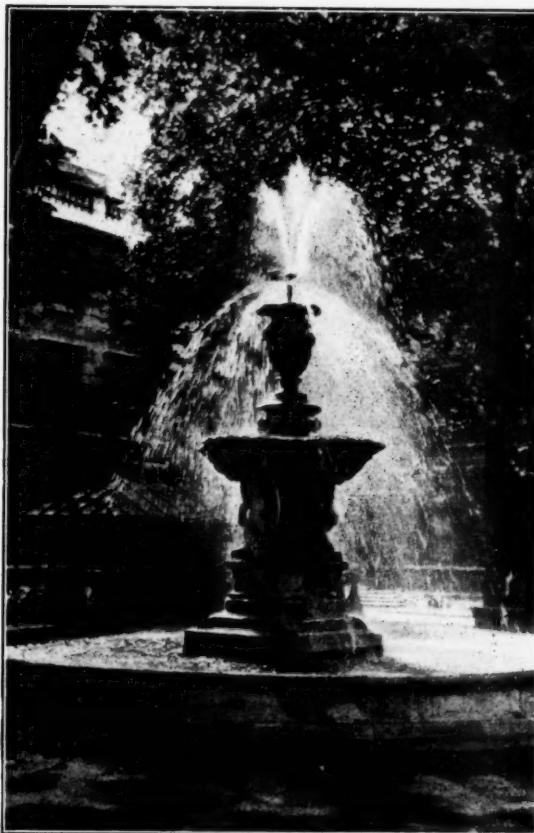
Shaw, A. B.

L.M.S.S.A.

The following have completed the Final Examination for the Diploma:

Bowles, K. R.

Hamilton, S. G. I.



JOURNAL COVER : COMPETITION

The Publication Committee intend to offer a prize of five guineas for the winning design for a new cover for the Journal.

Designs may incorporate the whole cover page or simply replace the present design. They should be accurately drawn in black ink on white paper of the correct size.

Entries should be received by the Editor before November 30th.

The Centenary of the Fountain, 1859-1959

THE STORY OF ITS CONCEPTION

by Miss M. V. Stokes

(Assistant Archivist)

What would Bart's do without the fountain? This thought entered my mind one day as I crossed the shade dappled Square and passed the chattering groups round the Fountain. It is almost impossible to imagine the Hospital without the fountain, indeed it has stood there for a hundred years. It may seem strange that Gibbs' original designs for the Hospital quadrangle did not provide for such a feature, but had a fountain been suggested at that time the idea would probably have been rejected as an unnecessary luxury. As it was the Hospital's finances were severely strained especially after Treasurer Tuff absconded with £4,000 in 1760.

From 1730, on the various engravings of plans and elevations issued in the campaign to raise subscriptions for the new buildings show an open quadrangle but the space was not cleared for over thirty years. Demolition of the old Hospital buildings, shops and houses had only been piecemeal, as the site of each wing was cleared in turn, and buildings had been left in the centre. However, in February 1766, the Governors resolved¹ that as the fourth wing had been furnished and as the houses and shops in the middle were in a ruinous condition, they should be taken down. They were divided into lots and in October² they were auctioned, the purchasers being given until Christmas to demolish and to cart away the material. In the following June³ an agreement was made with William Staines, paviour: he was to pave the sides of the Square with sound Ealing edge pavement, 9 ft. 6 in. wide, with a kerb of Cornwall moor stone and with 2 ft. of pebble laid in gravel, in front of the kerb. He was to keep it all in repair for 10 years but he would not be chargeable for damage by water-pipes. Earlier the Governors⁴ had given instructions that the "ancient well, formerly in Well Yard, now laid into the said area (the Square) of the Hospital be cleared and made fit for use and that a pump be put down in some convenient place... to be supplied with water from the same well". Nothing seems to have been done about this for there are no more references to it and none of the eighteenth century prints shew a pump. The earliest, printed for H. Parker after 1752 has people of quality admiring the new buildings, two blue coat boys, several cripples and a beadle with his staff but no well or pump. There is a reference of 1809⁵ to a pump in front of the Men's House but no plan or view shews it.

Later prints, one from a drawing by Neale, published in 1815 and a later one from a sketch by Thomas Shepherd do include a tubby pump surrounded by railings. This was the one constructed in 1809. The supply of water from the New River Company had proved inadequate for the Hospital's increasing needs and the Governors had ordered the Surveyor, James Hall, to open and examine the old wells of the Hospital⁶. In his report of 20th January 1809⁷ he stated that he had been unable to find either the old well, which was supposed formerly to have supplied the pump to the Men's House, or the well once in the centre of the Well Yard. He went on to say that he had learnt that springs were near the surface for there had been difficulty over flooding of the foundations for Gibbs' buildings. The Governors decided that a well should be dug in the centre of the Square⁸. It was this well, with the pumping gear over it, that is seen in the early nineteenth century prints, though its position seems to vary with the artist's whim.

According to the Charity Commissioners Report of 1837 each wing had a tank containing 1,800 to 2,000 gallons supplied by the steam engine in the Square; this supplemented the amount from New River Company. The well in the Square was still providing 13,000 gallons out of a daily total of 40,478 gallons in 1854, but the Surveyor, Philip C. Hardwick, the third of his family to serve the Hospital⁹, suggested that when the New River Company had completed its new works the well supply might be discontinued¹⁰. On 17th December, 1857¹¹, Hardwick recommended that as the well had been disused for some time, the gear of the pump should be sold. The Governors approved this step during the next month¹², but it was not until January 1859, that the House Committee asked the Treasurer and the Surveyor to see that the Square was planted out¹³, and nine more months passed before the idea of a fountain was considered by this Committee¹⁴, "several of the Governors and Medical

Staff having expressed a desire to see one placed there". In his report ¹⁴, Hardwick estimated that the cost of construction would be about £220, and the basin with its pipes £40. He also submitted a design of a group of figures which would cost £95. He pointed out that it would be necessary to carry the jet high enough so that it could be seen over the shrubs and that the cost of a figure group would not be very much more than any "nearly architectural form



Drawing of the Square in 1870

of the same height". On 11th October, 1859¹⁵ the Governors resolved "that a fountain be erected in the Hospital quadrangle in conformity with the design of the Surveyor and according to his Report". There is no further reference to the subject in the Governors' Minutes, either of the House Committee or of the Treasurer and Almoners. Hardwick apparently just got on with the work; however, one part of his scheme does not seem to have been adopted; he had recommended that the fountain should be fed from tanks placed in the roof above the Great Hall, but there is no evidence, written or material, that this was ever done, and it is probable that the fountain has always been supplied direct from the mains.

A drawing of 1870 shows the Fountain surrounded by young plane trees and shrubs, the latter were cleared and replaced by shelters in 1895¹⁶. Since then there have been no major changes and the fountain has continued to bring pleasure to succeeding generations of staff, students and patients.

References

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|---|---|---------------------|
| 1. Ha1/13, p. 417, 14th February 1766. | 6. Ha1/16, p. 228, 1st September, 1808. | 11. Ha1/21, p. 325. |
| 2. Ha1/13, p. 449, 22nd October, 1766. | 7. Hc9/2, p. 214. | 12. Ha1/21, p. 411. |
| 3. Ha1/13, p. 491, 25th June, 1767. | 8. Ha1/16, p. 290. | 13. Ha1/21, p. 475. |
| 4. Ha1/13, p. 475, 20th February, 1767. | 9. Hc10/1, p. 148. | 14. Hc10/1, p. 198. |
| 5. Hc9/2, p. 214 | 10. Hc10/1, p. 176. | 15. Ha1/21, p. 480. |

A Hundred Years Ago Today . . .

A CELEBRATION OF THE FOUNTAIN IN VERSE

by R. B. PRICE

A hundred years ago today
This old familiar Square
Was arid, parched and waterless;
Its aspect grim and bare.

The ancient mediaeval well,
From which the friars drank,
Was lost, and none could now locate
That long forgotten tank.

As once in Sinai's Wilderness,
When Moses smote the rock
And cooling streams came gushing forth
To cheer his thirsty flock,

So in this City Wilderness,
This waste of bricks and mortar,
From thirsty St. Bartholomew's
Arose the cry for water.

Our patriarchs inclined their ear,
Like Moses on the mountain,
And just one hundred years ago
Decreed this noble Fountain.

It's grateful form, its limpid pool,
Have quite transformed our Square,
And grateful generations since
Have known and loved it there.

The students still assemble here,
And round the Fountain's rim
Old reminiscences are told
And stories gay or grim.

A freshman mingling with the throng
May overhear perhaps
How one late reveller once swam round
Submerged for several laps;

A hundred years of history,
Both trivial and great,
Enacted round the Fountain,
Today we celebrate.

And still it stands, symbolical
Of all the healing arts,
A source of life and energy,
The very heart of Bart's!



B. C. King.

Or still with disrespectful glee
The tale may be rehearsed
How one prospective V.I.P.
Was forcibly immersed.

Long may it play, and long adorn
This well-remembered Square;
A bond, a symbol, and a shrine
To Bart's men everywhere!

Fons Et Origo

All places have their presiding spirit. That of Bart's is definite and recognisable, but an analysis of its origin has seldom been attempted. This short paper may perhaps stimulate further and deeper research into the matter. Rome had its wolf, Venice its lion and Athens its owl.

Some years ago the fountain lay empty for some weeks for cleaning or for repair, and while in its dry state it provided a short cut for a ward cat, whose habit it had been to visit a lady friend in the opposite block, previously circumventing the basin of water. In due time the fountain bowl was refilled, unknown to puss, in whom, in the meantime, Cupid had lit such a flame of desire that, as one evening fell, he issued from his ward, sped at full gallop over the square, and leaped high over the verge of the basin to find, too late, that his landing place was no longer solid ground.

A splash and a frenzied flurry preceded the emergence of a soaked, shocked and chastened Tom. History had it that thence forward his reformation was marked by modesty, courtesy, regard for others and, in short, by all those qualities which mark the Bart's man. Furthermore, his new birth was noticed, and recorded, by an acute observer.

Personally, I believe the facts to be true but the deduction false, for surely there were typically courteous and unselfish Bart's men before twenty years ago when the event occurred. Be this as it may there is no doubt that some ameliorating influence does issue from our fountain.

Not for nothing have certain persons been thrown fully clothed into its basin. Arrogance has in some been the cause, failure to wash in some, and in a few an unpleasant type of incompatability. I have witnessed the phenomenon several times, as a student and as a member of the staff. One afternoon at nearly half past one I was waiting, as a clerk, to attend my chief upon his round. The square was well populated and calm until from one corner there emerged a mobile group. A kicking, writhing and twisting form was being carried horizontally, by figures who gave at his every lunge but did not loose their grip, towards the fountain.

All in the square surveyed the scene with interest or with amusement, except the members of the visiting staff. These, at a moment's notice summoned one of the most valuable characteristics of the Briton. They saw but they appeared not to survey. Moreover, without seeming to walk they were next visible at a tactful distance from the scene of execution.

The climax of this was preceded by a tentative swing or two on the part of the carriers, who then, with a final hard heave, precipitated the subject up into the air whence he fell with a resounding splash, to emerge a wet and miserable object, but it is to be believed chastened and improved by his immersion.

In latter days the gentler sex has joined our ranks. The ladies were quick to note the virtue of our fountain water. They won the inter-hospital hockey cup twice running, and the winning team was photographed, in hockey clothes, in the square. After this ceremony was finished the captain was seized by her hand-maids, and was cast, an apprehensive but not too unwilling victim, and at any rate, suitably garbed, into the watery arms of Fons. Since this first happened the cup has remained in our hands. May similar sacrifices ensure that this will continue.

My old friend 'Doc' Fisher, a one-time Cambridge stroke, during his last Christmas at Bart's, inspired perhaps by Bacchus, leaped into the basin one night and swam round it thrice, fully clothed. No wonder that later he returned to his native Skipton and became the much loved doyen of medicine in the town among the Yorkshire moors.

During the First World War, Girling Ball was air-raid officer, and one night the hospitaller, a rather nervous cleric, came to him from his bed over the Henry the Eighth Gate with a tale of continuous although distant bombs. Ball afterward told the story. "The parson came in the middle of the night and woke me from the first good sleep I had had for days. He said he heard bombs. I dressed and went out into Smithfield. 'Bombs!' I said, 'Those aren't bombs, they're porters dropping carcasses in the meat market.' Silly ass of a parson. Put 'im in the fountain. Proper place for parsons!" Ball too had hopes of the beneficial influence.

So, in future, may our fountain continue long to bless and mould us and our successors. Even if the benediction is only administered by way of a cold gluteal kiss as we sit on its limestone rim.

GEOFFREY BOURNE.

The Ethical Aspects of Therapeutic Abortion

I. AN ANGLICAN VIEW

by A Bart's Surgeon

*"Every moral position is dogmatic and ultimately unprovable."**

General Principles

Moral standards are of immense importance in every community and may well determine the destiny of a nation. They may be derived from religious convictions or may have evolved and changed under stress or experience over many hundreds of years. But whatever their ultimate origin, or their present dynamics may be, there is no doubting the truth of the initial quotation. Every moral position is dogmatic. The dogma may be derived from a God-given revelation or from human exegesis. This inevitability of dogmatic foundation, makes it rather easier for the Christian to put his viewpoint, which, by its very nature, is bound to stress its dogmatic origin founded in revelation.

At this point two questions arise and demand an immediate answer:

(1) Is it incumbent on the Christian, when there is no explicit guidance in his religious teaching, to concern himself to define a Christian attitude to the problem under consideration? The early Christians were called men of the Way for the simple reason that they believed that Christianity was a way of life based on an inward relationship with an unseen Master. This way of life permeated all that they did and set new and exacting standards in every department of life. In particular, the earliest Christian writings are full of references to the need for bringing all personal, family and social relationships into conformity with the moral standards inseparable from a desire to please their new Master.

(2) How can the Christian decide his attitude and set his standard in a matter of human behaviour which is not explicitly covered by any precise set of rules in his body of doctrine? The exact way that this question is answered will depend on the theological position and the Churchmanship of the individual Christian, and this article must be considered as the personal approach to the problem of an individual Anglican. Great emphasis was laid at the Reformation on the right and liberty of individual and private judgement. The 39 articles of Religion lay it down that the Scriptures are the ultimate authority for the establishment of

doctrine and "instruction of manners". The Westminster confession similarly states that the Scriptures are our final authority in all matters of faith and conduct. How can the Scriptures help us today in this modern problem? It is certainly not specifically referred to. The Old Testament lays down much detailed regulation of many similar human problems of behaviour but this one is scarcely touched upon. The New Testament tends to lay down great guiding principles and stresses the over-riding importance of sincerity and motives and the much greater importance of "inwardness" in religion as opposed to the externalism rife in the lifetime of Jesus. We must refer to these principles and see how they can be applied to this matter in a way which is consistent with the Scriptures as a whole.

Therapeutic Abortion

It is well for us to see first what possible disadvantages and dangers that abortion in general may give rise to, and what prohibition of moral law it may transgress, before we consider the nicer points of therapeutic abortion.

Deliberately induced abortion involves a deliberate killing of the foetus which has attained an identity and is, potentially at least, a human being. (This takes no note of the prime motives in initiating the abortion.) It can therefore be regarded as a taking of human life. Side by side with this, abortion deprives a developing human of its right to existence and development. It can also be charged against abortion that it may cause danger to the health and life of the mother, and it also is open to the charge of assisting depopulation, or of failing to assist maintenance or increase of population.

There is little doubt that the main issue is that it may constitute an unjustified or unjustifiable assault on the cardinal principle of the sanctity of life.

These are some, at least, of the points which the moralist must examine and endeavour to establish or exclude their validity.

Sanctity of life is a widely held ethic

* Glanville Williams in "The Sanctity of Life and the Criminal Law" (Faber and Faber) p. 182.

throughout the world and this is, of course, not limited to those embracing the Christian faith or influenced by it. Christian theologians have shared a difficulty common to other thinking people that no one can know for certain at what point in its life cycle the fertilised ovum becomes truly a human being, in particular at what point the spiritual component can be said to "take up residence". To those who are convinced that man is no more than a vast bio-chemical synthesis, this naturally presents no problem. But for all men and women who think, or hope, or who are certain in their own minds that at death some spiritual identity quits the body, logic and reason demand that at some point a spiritual factor must have entered that body. And so it is, for a very great number of human beings, a matter of importance. If we are to be on the safe side, we surely should assume that from the moment of conception, a new individual exists—a spiritual being which, if it is allowed to develop without interference, may grow into a great man or woman capable of making an immense contribution to human progress and Divine pleasure. It would seem therefore that an act designed to nullify this possibility must be considered as an assault on the sanctity of life. What specific direction does the Christian acknowledge which can be invoked at this point? There is no doubt that Old and New Testaments command that man should not kill. In the Old Testament, when this is first laid down in the codified law of Moses, (a similar prohibition is recorded much earlier in Old Testament history), it must be apparent that exceptions to this simple law are intended. Capital punishment is advocated and war is most certainly not outlawed. In the New Testament there is no explicit countermanding of these exceptions. Some have read into the Sermon on the Mount an implicit denunciation of all forms of force and resistance, which would automatically exclude the punishment of the criminal (including involuntary imprisonment) and all participation in war. But many others who consider this special teaching of Jesus concerning the personal attitude of individual Christians to maltreatment by others, in balance with His other teaching, do not accept this interpretation. This latter group hold that the Old Testament teaching in this respect is not changed by the more advanced teaching of Jesus and with this the writer agrees. And so it can reasonably be

held on Christian grounds that there are carefully guarded exceptions to the important principle that life may never be taken. If this point be conceded then the Christian must be willing to face the possibility of an intervention to initiate an abortion. It will be of vital importance to scrutinise the indications most carefully but first it must be pointed out that there are those who concede this point who yet are unwilling to consider therapeutic abortion as being permissible for a consistent Christian—be it the mother or the medical practitioner who is concerned. What are the reasons for this? The Roman view must be briefly mentioned here but will be dealt with by another contributor in another article. It is taught that the foetus has the same right to life as the mother. To this it may be replied that the mother has the same right as the foetus and there is the inevitability in certain circumstances of an inescapable moral choice. Side by side with this view the Roman Catholic believes in the absolute necessity of baptism of the infant (or even foetus) to save it from eternal punishment for original sin. The Anglican may adhere to the doctrine of original sin but is in no wise committed to this view of the necessity of baptism of the foetus or infant to ensure its participation in the benefits of the Redemption.

Therefore it would seem to this writer that it is not inconsistent with a complete loyalty to Christian teaching for a Christian to participate in abortion for therapeutic reasons. He is making a moral choice between sacrificing an actual life with conscious enjoyment of it and with, perhaps, very heavy responsibilities, and the sacrifice of a life which only has the potentiality of these things. It is a choice he has not sought but which he endeavours to answer in a way which takes all relevant matters into consideration. This choice pays due regard to the prime doctrine of the sanctity of life and only dares to set it aside for genuine reason of real weight within the permitted exception. The motive must be to save the mother's life rather than to destroy the foetal life for convenience.

The scope of what is implied by the word "therapeutic" must be carefully scrutinised. The most obviously valid reason for undertaking this treatment would be to save the mother from death or from a significant shortening of her life. This is the primary somatic reason but its frequency has lessened with the years and with progress in treatment

and knowledge of prognosis. Some would extend this to include varying degrees of serious disability. The mother's mental condition and the likelihood of serious mental breakdown is another important factor for consideration—one which is very difficult to assess. There are those who would introduce the eugenic indication and the socio-economic indication and finally those who would make abortion a matter of choice for wife and husband. The writer has neither space nor inclination to indicate where the line might be drawn but for the Christian it must certainly be clearly drawn from principle and not for convenience. Here is the

place and this is the time to examine with sincerity the motives which lie behind the consideration of an individual case in which therapeutic abortion is being considered. Thus, the Christian knows that to take life or to initiate the suppression of it is for him, forbidden, apart from the jealously guarded exceptions. Is the case concerned a real exception? Is there a valid threat to maternal life or healthful ability to face the future as wife and mother. The motive of mother and practitioner, and their sincerity of purpose must be the arbiter in each individual decision.

II. THE JEWISH VIEW

by D. Weitzman, M.D., M.R.C.P.

In the Jewish ethical view the interests of the mother are generally considered to have priority over those of her unborn child. As Jacobs (1951) puts it, although it is axiomatic in Jewish law that one life may not be deliberately sacrificed in order that another be saved, an unborn child (whose viability has yet to be proven) is not regarded as a "life" in the same sense as the manifest life of its mother. The first authoritative pronouncement on the subject, dealing with obstructed labour, appears in the Talmud, a Rabbinical code of laws formulated between the second and fourth centuries of the Christian Era. This lays down that "if a woman is in hard travail, one cuts up the child in her womb and brings it forth member by member because her life comes before the life of the child. But, if the greater part has proceeded forth, one may not touch it; because one may not set aside one person's life for that of another." Elsewhere in the Talmud the foetus is regarded as an integral part of the mother; and embryotomy is equated with amputation of a limb, when necessary for the preservation of the owner's life.

The fuller implications and application of the Talmudic doctrine have been discussed over the centuries by many religious and medical authorities. Recently Jakobovits (1955) has carefully analysed these arguments, and sums them up as follows.

1. Up to the onset of labour, the foetus is regarded as an organic part of the mother,

and there is no legal provision for the protection of its life, according to the concensus of rabbinic opinion. The artificial termination of pregnancy is however strongly condemned on moral grounds *unless justified for medical reasons*.

2. During labour and until the head or the greater part of the body is born, the child's life is of inferior value; and it is wrong to let the mother die if she could be saved by the death of the child.

3. Once the head or the greater part of the body has been born, the child's life is of equal status with its mother's; but, since viability cannot automatically be assumed, it would be legal to kill the child at this stage when otherwise *both mother and child would die*. It would not be legal to kill the child if it could otherwise survive the mother's death.

Considering the first of these principles, there is no argument about the right to terminate pregnancy when the mother's *life* is thereby endangered. There is however less uniformity of opinion where a deleterious effect on the mother's *health* is concerned. One view expressed is that therapeutic abortion in such cases is strictly legal only when the child is the direct cause of the maternal disease. (This would presumably apply to conditions such as toxæmia and breast cancer.) Otherwise the moral right to intervene is problematical, but could probably be justified on medical grounds. (Rabbi Isaac

Schorr, quoted by Zimmels, 1952.) The third principle brings to mind the problem of the after-coming head in a case of contracted pelvis which escapes ante-natal supervision and planned Caesarian section. If craniotomy proved inevitable, it could presumably be justified by the principle of paramountcy of the mother when both she and the child are in danger.

There remains the difficult question of the right to terminate pregnancy purely because of psychological disturbance. The ecclesiastical authorities whom I consulted felt that there was no definite ruling on this point. They agreed however that due weight would be given to medical advice.

Probably the most significant factor influencing the Jewish ethical attitude is the deference given to medical opinion and the ability of the latter to over-ride all other considerations. Jakobovits (*loc.cit.*) thinks that Jewish law is perhaps unique in the extent to which the evidence of doctors can lawfully be trusted for legal and religious purposes. Thus, if any doctor (not necessarily Jewish) considers it advisable for his patient's welfare that Jewish religious laws be broken, then it becomes imperative to do

so. In Rabbinical doctrine it is a well-established principle that saving a life supersedes all other considerations (*Otzar Ha-poskim*, quoted by Klein, 1959). It appears fair to say that, in the Jewish ethical view, positive action directed toward the safety of the living mother usually takes priority over a life whose viability is an unknown quantity.

I acknowledge with gratitude the advice, religious and obstetrical, given me on this subject by Rabbi Louis Jacob, of the New West End Synagogue; Rabbi Lew, of the Beth Din; Dr. Samuel Sacks, Miss M. E. Landau and Mr. Alment. I also thank Mr. Thornton for his assistance in locating suitable works of reference. But for the kindness of all these people, I would have been unable to compose this review.

References

- JACOBS L. (1951) *Jewish Chronicle*, Nov. 16th, p. 15.
 JAKOBOVITS I. (1955) *Jewish Medical Ethics*, Ph.D. Thesis, University of London.
 KLEIN I. (1959) *Conservative Judaism*, Summer number, p. 35.
 THE TALMUD Oholoth, vii, 6.
 ZIMMELS H. J. (1952) *Magicians, Theologians and Doctors*, Goldston, London, p. 212.

III. THE ROMAN CATHOLIC VIEW

by Dom Benedict Webb, M.R.C.S., L.R.C.P.

The Christian concept of marriage is in complete contrast, in many respects, to the pagan one which is becoming so prevalent again today. The Catholic Church claims to bring the authority of Christ Himself to bear in the guidance she gives to her subjects, both on dogmatic and moral issues. She teaches, for instance, that marriage is something more than a natural contract free to be dissolved at will by human consent; it is also a sacrament, instituted by Christ Himself as a permanent union. Her teaching condemns those other practises advocated by the pagan such as contraception, sterilisation and abortion for the slightest medical, or economic indication. She does so with the certainty that her teaching is right, not only because of the authority she wields but also because it is her duty to guide the human

race to its supernatural end in obedience to the precepts of God.

Since this article aims at summarising the ethics of the Church on therapeutic abortion, it is necessary first clearly to define some terms. An abortion is the expulsion of a living foetus from the uterus before the 28th week of pregnancy, before that foetus is said to be viable. It may occur *spontaneously* following an accident or from some organic disease; or it may be *induced* by intentional interference. If the latter be the case, that interference is said to be *criminal* when it is procured either by the mother herself or by another for no good reason; and it is called *therapeutic* when it is carried out to save the mother from death or from serious ill-health, that is, when it is considered that to continue the pregnancy would seriously en-

danger the mother's life or health. Examples of such circumstances would be in cases of advanced pulmonary phthisis, chronic circulatory insufficiency, carcinoma of the cervix, severe toxæmia of pregnancy, and even advocated today are rubella and mental distress (cf. *Rex v. Bourne*, 1938). In general, it is the opinion of the gynaecologist that is the criterion in deciding if and when to terminate pregnancy in these and similar cases, and he bases that opinion on the grounds of possible damage to the mother's health, irrespective of whether or not the foetus is alive.

The teaching of the Catholic Church on the morality of procuring an abortion is clear and forthright. It is her duty to give moral decisions so that we might know what is God's Will in our regard. She strengthens her teaching, in serious cases, with legislation of a penal character. She first distinguishes between *direct* and *indirect* abortion. *Direct*, voluntary abortion is performed when means are employed to procure the ejection of the foetus as the primary end of the medical treatment used. This is always wrong since it is the direct killing of an *innocent* human being. The foetus is not an unjust aggressor and therefore its destruction cannot be permitted. The obstetrician must do all he can to save both the mother and the pregnancy but he must take no action the *direct effect* of which is to kill either of them. The Church has always condemned direct abortion and she imposes excommunication on those who effectively procure it.

When abortion occurs naturally but is incomplete, and the signs indicate that the foetus is dead, it is obviously permissible to evacuate the dead tissue from the uterus. In cases of threatened abortion, however, when the evidence suggests that the foetus is still alive, even though the abortion threatens to become "inevitable", it is not permissible to evacuate the uterus since this would be direct abortion.

Indirect abortion is a very different problem. It is the result of some action or treatment the purpose of which is other than abortion. For instance, if pregnancy occurred in an early case of carcinoma of the cervix, the death of the foetus would obviously result from treatment, surgical or radiological, of the diseased uterus. Yet the Church allows this since the treatment is not directed primarily to killing the foetus but to the removal of a diseased uterus and as a second-

ary result, the foetus would be destroyed. The death of the foetus is not essential to the means taken; it is visualised and permitted but not desired by the surgeon. This course of action invokes the Principle of the Double Effect. Any action can have two effects, the direct effect and the indirect effect. An act is evil if the direct effect is evil and consequently that act is never morally permissible. The Principle of the Double Effect states that, provided the purpose of the agent is a good one; that what he actually does is good or at least indifferent; that what he does results in a good effect not achieved by means of the evil effect; and that there is a suitably grave reason for entering on the whole course of action: then one may permit the evil effect which also results.

The difference between direct and indirect abortion should now be clear. The Church permits indirect abortion if the reason is sufficiently grave to justify it. In the majority of cases, the teaching of the Church is in agreement with the conclusions of common sense, ethics and good medical practice. There are some well known examples, however, of cases where she differs from the usual practice, such as in the treatment of rape and ectopic gestation. In rape, there is unjust aggression and the violated woman has every right to take such means as are possible to remove the semen before conception has occurred. Once the ovum has been fertilised, however, she cannot terminate the life of this being on the grounds that it is an aggressor since the aggressive factor is the male element and the male element alone. The pregnancy must be allowed to continue even though the child may be unwanted since every human being has the right to its existence and we have no right to destroy its innocent life.

In ectopic pregnancy, the variety of situations makes this a more difficult topic to summarise. The commonest site is tubal, either interstitial, isthmal or ampullary. Less commonly, the foetus starts growing in the abdominal cavity or most uncommonly of all, in the ovary. In very rare instances, it has been known for the primary tubal pregnancy to go to term and be removed by Caesarean section. In the majority of cases, the ovum is expelled either through the fimbriated end of the tube or by rupture, and both these events are usually accompanied by severe haemorrhage endangering

the health of the mother. Death of the foetus is the usual sequel to rupture and no moral problem is presented to the surgeon. Very rarely, a secondary ectopic gestation results in some position outside the tube which threatens to result in further serious haemorrhage.

Hence, three situations commonly present themselves to the surgeon. Firstly, the woman admitted with severe haemorrhage following rupture of the tube is in grave danger of death. Applying the principle of the double effect, the bleeding blood vessel may be ligatured since it is the offending cause of the danger and as a secondary effect the foetus will die in consequence. Once this has been done, the dead foetus may be removed.

Secondly, where a tubal pregnancy is diagnosed and only mild symptoms are in evidence, it is possible either to allow the pregnancy to continue in the hope that the child can be delivered near term by Caesarean section, or to remove the organ containing the developing foetus. The latter is more normal practice and it is justifiable

on moral grounds since the ovary or tube is in a pathological state and to remove it is to remove a diseased organ, even if the indirect effect is death of the foetus.

Thirdly, if the ectopic gestation is discovered accidentally during another abdominal operation, it is morally possible to remove the diseased organ on the same principle provided it is considered that the foetus would be unlikely to go to term. The danger of haemorrhage is always present in these cases and there is adequate reason for removing the organ containing the ectopic. It would be wrong to remove the ovum while attempting to preserve the organ containing it since this would be direct killing of the ovum and this has been condemned by the Holy See.

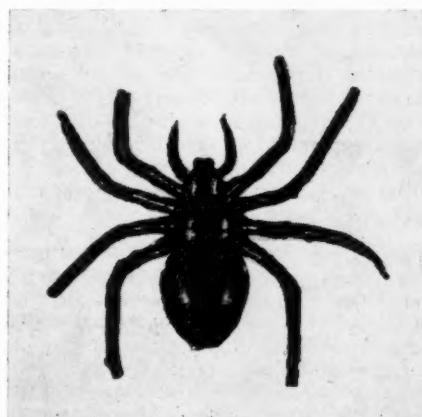
In conclusion, Catholics must surely feel grateful for the guidance of the Church in this matter which is so full of problems for the unaided conscience, as every doctor knows; the Church speaks with the authority of Christ and Catholics know that they are right with the certainty of Faith.

AN UNUSUAL FOREIGN BODY

One of the fascinations of working in the Ear, Nose and Throat Department is the finding of unusual foreign bodies in the various orifices of the head. In the last few weeks I have removed several fishbones from the pharynx, and a pin, match head and barley husk from ears. But the most unusual find had the following history :—

The patient, Mr. M. E., aged 18, came to the Department in a very distressed condition at 12.30 p.m. on 30.1.59. Bloodstained saliva was exuding from the corners of his mouth, and he smelt strongly of beer. When he announced, with obvious pain, that he had swallowed a spider, eyebrows were raised. However, with the aid of two assistants, I was able to depress the tongue enough to see a black leg sticking up behind it and, to our great surprise, a gentle tug with a pair of aural forceps produced a large spider (see photo). When the patient had recovered, he was able to explain the presence of this in his throat. A "friend" had put it in his beer mug as a practical joke but, being thirsty, he drained his beer at one draught

and imbibed the object without noticing it. The spider was made of plastic !



I hope this case will avert a similar tragedy for other enthusiastic drinking men.

I would like to thank Mr. F. C. W. Capps for permission to report the case, and Mr. Harrison for taking the photograph.

THE LIFE AND WORKS OF JOHN SNOW

The Wix Prize Essay, 1959, by M. T. Barton

PART II : ANAESTHESIA

Three qualities, dexterity, speed and courage marked the Surgeon of the early 19th Century. An operation was an ordeal, both for the sensitive onlooker and the agonised patient. Because of the fear of peritonitis, abdominal surgery remained unthought of: thoracic surgery was unheard of, and the Surgeon's skill was mainly directed towards amputations and the removal of tumours. It was a question of which reached you first—death or the Surgeon's knife. To reduce the time of suffering, the best Surgeons of the day developed an amazing speed in operating. Mesmerism, morphia, alcohol had been used to reduce the patients pain without convincing success. In 1800 Davy, after careful experiment, noted that nitrous oxide was capable of destroying pain and might be used in surgery that did not occasion too great a loss of blood, but he did not follow it up, possibly the greatest missed opportunity in the history of anaesthesia.

In 1845, because of his poor technique, Wells was laughed from the operating theatre of the Massachusetts General Hospital when he attempted to use nitrous oxide to kill the pain of an operation. But on October 16th 1846, before a sceptical and incredulous audience, Morton successfully etherized a patient in the same operating theatre where Wells had previously failed. John Collins Warren, senior Surgeon to the hospital removed a vascular tumour from the neck of the unconscious patient, and then, amazed, turned to his audience and said "Gentlemen, this is no humbug".

Jacob Bigelow, an onlooker at the operation, wrote to Dr. Boott of London and on December 19th, 1846, ether was first used in this country in a dental extraction. Two days later Robert Liston, the most famous surgeon in London performed two operations at University College Hospital before an audience of notable men, including Joseph Lister and J. C. Clover who in later years became himself famous in anaesthesia. In the issue of the Lancet dated January 7th 1847, Boott publicly announced the new pain killer and reproduced Bigelow's letter to him.

Snow seized upon the new discovery apparently at first as a subject perfect for scientific investigation. His previous experiments on the inhalation of carbon dioxide, his interest in the physiology of respiration and the keenness of his mind fitted him admirably for the task.

The methods at first used in England followed the pattern of Morton's inhaler—ether soaked sponges inside a glass container connected to some sort of mouthpiece fitted with valves to ensure a one way flow. Snow quickly perceived the fundamental errors in this technique: the ether on vaporising would cool the incoming air so much that the patient would be breathing vapour so cold that it would only increase the already irritant properties of ether, making it harder still to get a smooth induction: the sponges would block the flow of air: and, whatever way was used for giving ether, the operator had no idea what the effective concentration of ether was. By January 16, 1847, Snow had worked out the vapour pressure of ether at various air temperatures, and had arrived at a roughly suitable concentration figure for it. He had already designed an inhaler that did away with sponges and other obstructions to air entry and was having it made by Mr. Fergusson of Giltspur Street, Instrument maker to St. Bartholomew's Hospital. Shortly afterwards the inhaler was ready and Snow published an account of it, with illustrations, in the Lancet. An example of this inhaler exists today at the Royal College of Physicians, together with one of the earliest face-pieces and a thermometer called a 'Thermometer' which is graduated in degrees Fahrenheit and in cubic inches of ether vapour per 100 cubic inches air "according to Dr. Snow's tables". In this inhaler air was drawn round a helix over the ether surface and then through a flexible pipe to the mouth-piece. The vaporizing chamber was intended to be placed in a basin of water kept at that temperature which would ensure the desired ether vapour concentration according to Snow's calculations. He calculated the dimensions of this apparatus with great care so that there should be easy vaporization and no obstruction to the passage of air.

Snow's work at this early stage was an important advance in the technique of anaesthesia. All other forms of apparatus were the results of empiricism. Snow was the first man to bring a scientific mind to bear on the problem, and quickly, by experimenting on himself and animals, to work out a suitable vapour concentration. Richardson relates a story of how Snow came to start his career as an anaesthetist—almost by chance. "One day, on coming out of one of the hospitals, he met a druggist whom he knew bustling along with a large ether apparatus under his arm. 'Good morning' said Dr. Snow. 'Good morning to you, doctor' said the friend, 'but don't detain me, I am giving ether here and there and everywhere, and am getting quite into an ether practice. Good morning, doctor!' 'Rather peculiar!' said the doctor to himself, 'for this man has not the remotest physiological idea. If he can get an ether practice, perchance some scraps of the same thing might fall to a scientific unfortunate.'

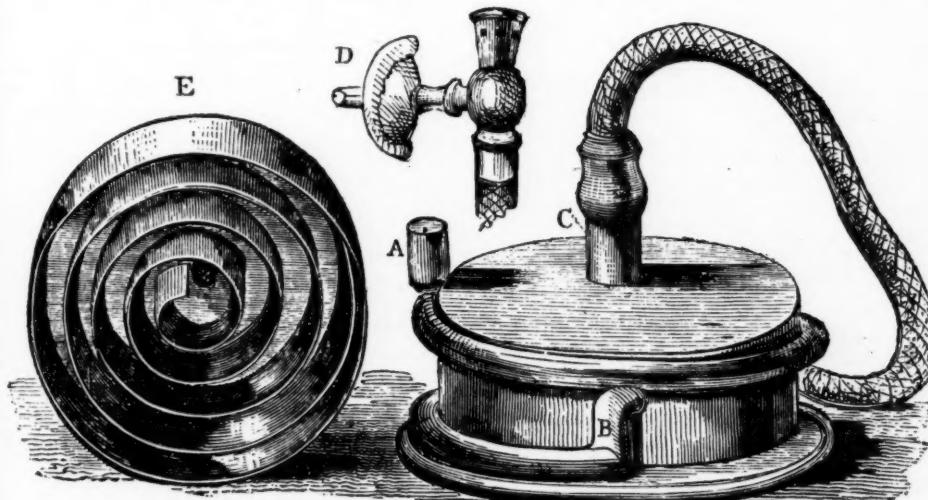
The success of ether was by no means assured in the early months of 1847. Excitement and struggling so frequently preceded insensibility, and often the patient could not be anaesthetized at all: it may well have been Snow's confidence in his own ability compared with the poor showing of others that really led him to seek permission to give

ether in the Out-Patients department of St. George's Hospital. His success here led to his being invited to give ether in the main theatre of the hospital and on January 28 he gave it "with very satisfactory results".

Success attended him and his methods began to attract attention. An article in the Lancet at the end of January says "The apparatus of Dr. Snow, as exhibited at St. George's Hospital on Wednesday last, was certainly most ingenious and perfectly successful, and I think has many advantages. But its success may be found, perhaps to depend more upon tact and thorough knowledge of the effects of the vapour on the system, as shown by its exhibitor Dr. Snow, than upon any peculiarity in its arrangement and mechanical construction."

On February 4th, Snow gave ether for Mr. Caesar Hawkins of St. George's before Sir Benjamin Brodie and many others. After the operations Mr. Hawkins "said that he wished publicly to express the thanks of himself and his colleagues to Dr. Snow who had invented the apparatus and applied it in these cases. He considered the instrument of Dr. Snow very much superior to those they had previously used and it had the great advantage of enabling us to regulate the proportion of vapour administered."

Ten days later Snow addressed the West-



A, Opening of pipe at which the air enters.—B, Termination of pipe in the tin box.—C, Point at which flexible tube is removable by unscrewing.—D, Mouth-piece.—E, Tin vessel, with bottom removed, to show its interior.

*Snow's first ether inhaler
(an example is held at the Royal College of Physicians)*

minster Medical Society on the subject of ether. He had by then determined that etherization was not asphyxiation : the effect of ether, he thought, was to reduce oxidation in the capillaries. The depth of anaesthesia could be recognised by the eye signs and the pattern of respiration. By the end of February he had increased the size of the tube on the apparatus to at least the diameter of the trachea. The *Lancet* describes Snow's inhaler as being one of two main types in use in London—the other being the original Squires apparatus used in the first case in the country—and considers it small, compact and portable, one peculiarly adapted to country practice. In contrast to Morton's attempts to patent the use of ether, Snow offered his inhaler free of personal profit to the Medical profession.

On March 11th Snow demonstrated the effects of ether on birds, animals and fishes at the Royal College of Physicians, and by May he was giving ether regularly at St. George's, Westminster and University College Hospitals. On May 3rd he gave ether for the great Liston, who at the conclusion of the operating session remarked that "he had at one time doubts about the utility of ether, but he had lately performed several operations in private in which the ether had been given by Dr. Snow with perfect success. Dr. Snow managed the ether better than he had previously seen it given". Snow's ability had won over the most important surgeon in London.

By this time Snow had abandoned the mouthpiece in favour of a mask invented by Francis Sibson : this mask permitted the patient to inhale through the nose, but it was not long before Snow had modified it, fitting valves to it, to cut down the dead space of the apparatus. One of these valves he made moveable so that he could dilute the anaesthetic mixture with air during the induction.

On May 12, 1847, Snow gave a lecture to the United Services Institution in which he presented all his views on etherization to that date. He explained the relation between the air temperature and the ether vapour content with care and went on to recommend a vapour concentration of just under 50 per cent. Although he strongly denied any connection between etherization and asphyxia, he pointed out the great dangers of suffocation and the necessity of having an easy air flow through the inhaler. Snow explained his

method of giving ether slowly, using greatly diluted vapour at first, and the signs to be seen in the patient as the depth of anaesthesia increased. Even thus early in the history of anaesthesia, Snow insists on the ether being given by a medically qualified person, whose whole attention should be directed to the task, while the ether is being given.

As the months went by Snow gave ether regularly and successfully in St. George's and University College Hospitals, though his private cases were very few. In the Autumn of 1847 he published his first book, "On the inhalation of the vapour of ether in surgical operations" because of the numerous questions on the subject that had been put to him. It was not indeed the first book on anaesthesia to be written in this country, for Robinson, the dentist who first used ether in England to take out a tooth, published a treatise in March. But in comparison with Snow's work, it lacks the careful thought and scientific approach. Snow's book was a valuable guide to the anaesthetist of the day. He divided the process of etherization into five degrees recognising a degree during which the patient experiences various changes of feeling, whilst perfectly conscious and capable of voluntary movement. The next four degrees correspond closely with the four stages now recognised. He set out his method of giving ether, enumerated the dangers likely to be encountered, described his concept of the physiology of anaesthesia and gave notes on all the cases for which he had administered ether. The *Lancet* describing Snow as "one who had had very extensive experience in the administration of the vapour of ether, and who has also been distinguished by its successful administration" reviewed the book favourably, recommending it as a book that "will prove valuable to all who undertake to administer the ether vapour, by giving them very useful rules for their guidance." 126 copies were sold, priced 3/6. However the success of the book was short lived. In March two fatalities from ether had occurred and the public's confidence was shaken. The theory of the necessity and usefulness of pain gained adherents among the uninformed and the difficulties and unreliability of ether anaesthesia made many look around for a better substitute.

James Young Simpson, Professor of Midwifery at Edinburgh brought to the notice of the medical world the advantages of Chloroform in November 1847. From the

time he had first seen ether administered, he felt sure there would be other compounds of greater efficacy, and during the summer and autumn of that year he experimented with many volatile liquids, including acetone, ethyl nitrate, benzene and iodoform. The anaesthetic qualities of chloroform immediately impressed him. In contrast to ether, chloroform was quick and reliable in its



Snow's Chloroform Inhaler

Air was admitted through the droplet-shaped holes at the base of the flexible tube and passed down over the coil of bibulous paper, through slots cut in the bottom of it, and up the middle of the coil to the tube.

effect, had a more pleasant smell, was less irritant and could be given in much smaller amounts.

Chloroform quickly came to supplant ether in Europe. Simpson presented the new anaesthetic to the Medico-Chirurgical Society of Edinburgh on November 10th 1847 and by November 20th Snow had already conducted a series of experiments to establish the concentration of the vapour at various air temperatures. He appreciated its advantages but considered that greater care

in its use must be exercised, because of its rapid action, and he repeated his warning that an anaesthetic must be given by a qualified administrator solely occupied with the inhalation. From the first Snow was decidedly against the Scottish practice of giving chloroform quickly in large amounts, by means of a towel or piece of lint placed over the face. He thought it rash to give such a powerful agent without any knowledge of the dose absorbed and whenever a death from chloroform arose, he insisted on his method being the way to avoid complications. Snow gave chloroform slowly, by means of an inhaler, carefully watching the patient until the required depth of anaesthesia had been reached. That chloroform was being used with enthusiasm unrestrained by caution by some, and that Snow's meticulous methods were in sharp contrast to this, is shown in an article in the *Lancet* of February 26th 1848. G. T. Green, surgeon-accoucheur to Queen Charlotte's Lying-in Hospital wrote attacking the injudicious use of chloroform in Midwifery, but he specifically exonerates Snow "... the observations of Dr. Snow deserve the highest commendations. From having most frequently witnessed his mode of administering anaesthetic agents, I can safely bear testimony to the absence in him of that heedlessness so marked in the conduct of some other practitioners".

Snow's change to chloroform was quick and almost complete. Though still maintaining the greater safety of ether, he used it only 12 times afterwards. When questioned on this, he said "I use chloroform for the same reason that you use phosphorus matches instead of the tinder box. An occasional risk never stands in the way of ready applicability." He recognized that chloroform was capable of causing sudden death from direct action on the heart, but he maintained that this would not happen if it were given carefully, and he gave it to anyone who needed it, young and old alike, confident in his ability. In the use of chloroform Snow won such general approval that some years later he admitted that "Patients are often sent to me by medical men who hesitate, or decline altogether, to sanction the use of chloroform on their own responsibility."

At first Snow gave chloroform with his ether, but soon he designed and had made an instrument better suited to the new agent.

He retained the facepiece and tube, but reduced the size of the water bath and replaced the helix with a tube of bibulous paper which dipped into the chloroform, to form an evaporating surface. It was altogether a more compact apparatus. By means of numerous experiments on animals Snow arrived at the conclusion that a 4 per cent mixture of chloroform vapour in air was safe. With the water bath in his inhaler at 60°F. he obtained a 5 per cent mixture and this he further diluted by admitted air through the facepiece. Later as his experience grew, he attempted to obtain an even smaller concentration. In May 1849, he showed the Westminster Medical Society a large balloon holding 2,000 cubic inches of air. Into this he put enough chloroform to obtain a 3 per cent mixture. He was very pleased with the effect of this, but did not put his plan into general use as he felt the balloon would get in the way of the surgeon and the necessity to inflate the balloon with air by bellows would be troublesome. "It seemed necessary to sacrifice a little of absolute perfection to convenience."

Snow's insistence on an inhaler for giving anaesthetic contrasts strongly with the Scottish method. An Edinburgh dentist declared "all inhaling instruments were useless or worse than useless and no one in Edinburgh ever dreams of having recourse to them, a handkerchief being all that is necessary". This difference lasted until the last days of chloroform but Snow's approach to anaesthesia set the pattern for England and the Continent. Syme said contemptuously that chloroform was given in Edinburgh according to principles, in London according to rule : but Snow asserted that these rules were founded on principle, and it was he who raised anaesthesia from a practice of imperfection to a science.

Between May 1848 and April 1851 Snow published a series of sixteen papers in the London Medical Gazette on narcotism by the inhalation of vapours. For 20 months of this time he worked at the Brompton Hospital : he tested chloroform, ether, ethyl nitrate carbon disulphide, benzene, tribromomethane, ethyl bromide, carbon dioxide, the smoke from puff balls, opium, camphor, chlorine and many others. His research was always into the fundamental principles of anaesthesia, though he was constantly hoping to find some new drug that would combine the safety of ether with the ease of

administration of chloroform. Ultimately, according to Richardson, he hoped to find the perfect drug that would abolish pain without causing the loss of consciousness. His experiments were designed to test the physical properties of the various substances, after which he determined their effects upon animals and the doses required to produce insensibility. To some, he gave short clinical trials: benzene produced violent convulsive tremors during one inhalation, which was sufficient to discourage him from further attempts. Although he made one clinical trial of ethyl nitrate and was favourably impressed by it, he did not continue its use. He obtained from Paris a relatively pure sample of ethidine dichloride, with which he anaesthetised a small series of patients at Kings College Hospital. It appears he was not dissatisfied with it, but whilst recording his cases in his book *On chloroform and other anaesthetics* he was taken ill and died without giving his conclusion. In 1856 Snow became aware of amylene, which he began to use in November. He used it in his inhaler at a 15 per cent concentration and although he found it capable of causing sudden death by its action on the heart, the margin of safety was greater. It particularly recommended itself to him because it destroyed pain without destroying consciousness. By the end of July 1857 he had used it in 238 cases, but in his hands it had caused two deaths and he reluctantly gave up using it. Although continental countries were also using amylene, the fact that it was two of Snow's patients who had died discouraged its further use.

Towards the middle of 1848, Snow began to give anaesthetics regularly for Mr. (later Sir William) Fergusson of Kings College Hospital and it is from this time that his anaesthetic practice multiplied. One may see from his notebooks in the Royal College of Physicians how the number of anaesthetic cases began to outnumber his medical cases, until shortly he made no more report of the latter than a list of dates of attendances, which for a medical practitioner were few indeed. The administration of anaesthetics became his professional occupation. In the ten years before his death he gave it over 4,000 times, in one year alone, more than 500 times. Though by modern standards this is not excessive, in the middle of last century operations were by no means so frequent as now. The large London hospitals

would operate on one or two days a week, doing three or four cases at a time. Besides the three hospitals already mentioned, Snow was called in at Charing Cross, St. Marks, the Orthopaedic Hospitals and St. James Infirmary. He gave anaesthetics at the rooms of many surgeons and in the private houses of patients. On one occasion he went to Norwich to give chloroform whilst Mr. Aston Key performed an operation to relieve intracranial pressure in a case of cerebral haemorrhage. He anaesthetised for all the major operations of the time, and for many reconstructions of hare lip. He thought that the glottis was sufficiently sensitive at the planes of anaesthesia that he obtained, to prevent blood from being inspired, but he was careful to keep the patients sitting up so that if they bled, they could be tipped forward to drain the blood away. Such was his reputation, that in 1850 he was consulted on the advisability of giving chloroform to Queen Victoria at the birth of one of her children, but opinion was against it. Just as, at the beginning of anaesthesia, certain people were opposed to ether, claiming that squeamishness over causing pain could not accompany a bold dexterous operation, and that to abolish pain was an affront to divine law, so the use of chloroform in midwifery aroused vehement opposition. In the forefront of the battle was Simpson, who used every argument to support the practice that he had been the first to start. By 1853 the prejudice against chloroform in midwifery was still strong in the minds of the profession and the public, when the Association Medical Journal announced that on April 7th, Queen Victoria had been delivered of a prince, and that chloroform had been administered during the latter part of labour by Dr. Snow. The Lancet, representing the old guard and possibly annoyed that another journal should have announced the important news, denied strongly that chloroform had been used, and expressed horror at the idea. But it was a fact, and the successful use of chloroform in Prince Leopold's birth was an example from the very highest circles that demolished the opposition. Sir James

Clarke, the Queen's physician wrote to Simpson: "The Queen had chloroform exhibited to her during her late confinement. It acted admirably. Her Majesty was greatly pleased with the effect and she certainly never has had a better recovery." In his note books Snow recorded "at twenty minutes past twelve by a clock in the Queen's apartment, I commenced to give a little chloroform with each pain, by pouring about 15 minims by measure on a folded handkerchief. Her Majesty expressed great relief from the application. The effect of the chloroform was not at any time carried to the point of quite removing consciousness." He gave it for just under a hour and was meticulous enough to notice that the Palace clock was three minutes fast.

On 14th April 1857 Snow administered chloroform to the Queen during the birth of Princess Beatrice, using the same technique. During the labour, Prince Albert gave chloroform to the Queen before Snow arrived. Although he used his inhaler for nearly all surgical operations, in midwifery he advocated using a sponge or handkerchief and maintaining analgesia rather than anaesthesia.

It is interesting in the light of modern operative techniques, to know that Snow in his lifetime realized the effect of low temperatures in body processes, and that he conducted experiments on animals with crude curare, without, however, appreciating its future use. He also performed tracheal intubation on animals, through a tracheotomy.

By 1858 he began to set down in a book all his experience and teaching on anaesthesia. He was writing the last chapter when on June 9th, 1858 he suffered a stroke: it was left to his great friend Benjamin Ward Richardson to edit the book and add the final words. The Lancet's review is an epitaph to John Snow: "We have nothing but good to say of Dr. Snow: living or dead. The present work is by far the best—indeed, the only complete treatise on the subject which we possess. The man who has left us such a legacy cannot be said to have lived in vain."

Sports News

VIEWPOINT

By the time this Journal is published the Hospital and Medical College will have settled down, after the invasion of approximately eighty new students. It is to be hoped that a great proportion of them have taken part in one or more of the many sporting activities which are offered to them.

There always have been a number of students who do not take part in any sport connected with the hospital, as the standard is considered to be below the requirements of the person concerned. It is also well known that a student maybe at Oxford or Cambridge, chooses the hospital at which he wishes to study, by the standard of the sport which he wishes to play. There is even the example of a student at Cambridge, a well-known oar, who was coming to Bart's. He was asked if he was hoping to continue his rowing career at Bart's, and replied that he wasn't, since he had heard that the standard was so low.

This situation, of course, is a vicious circle, which is very hard to break. At the moment it does appear that in one or two sports, a great improvement in the standard has taken place. Fixture lists are being strengthened, and recently both the rugger team and the cricket team have reached finals in U.H. competitions. It is up to members of all clubs to do their utmost to help break the circle, and bring back Bart's sporting activities to their pre-war standard. This is indeed a monumental task, but it can be done, and to a large extent lies in the hands of sportsmen who have just entered the hospital.



RUGGER

1st XV v. Reading. Saturday September 26th.—Lost 6—8.

After a slow start in which the team was clearly feeling its way (this being the first match of the season) two penalty goals by Stevens gave Bart's a six points lead in the first half.

In the second half a rapidly tiring Bart's team was hard pressed by Reading who eventually broke through from penalty kicks for a couple of tries, one of which was converted.

Team: J. Robson, J. Bamford, M. Britz, J. Stevens, N. Birbridge, R. R. Davies, A. P. Ross, B. O. Thomas, C. C. Carr, J. Dobson, G. Halls, J. Hamilton, D. Richards, R. Jones, A. H. Kilroy.

1st XV v. Trojans, Saturday, October 3rd—Lost 13—5.

Although the forwards settled down quickly the back play was poor and the Trojans gained two tries in the first half, one of which was converted. In the second half the play was much improved and pressure from Bart's resulted in a try by Bamford which was converted by Stevens.

After this the hospital began to tire and just before full time allowed the Trojans another try which was converted.

Team: J. Robson, S. Harris, J. E. Stevens, J. K. Bamford, N. Birbridge, R. R. Davies, N. Burbridge; B. O. Thomas, J. Hamilton, A. T. S. Knox, G. Halls, R. Jones, P. Moynagh, L. R. Thomas, A. R. Kilroy.

1st XV v. R. M. A. Sandhurst, Wednesday October 7th.—Lost 5—3.

In the early stages of the game Bart's were soon on top and both sides were playing good open football. A try by Britz gave us the lead until the fitter Sandhurst team forced play back into our '25' and succeeded in scoring an opportunist try just before half time—this was converted and Bart's started the second half 5—3 down.

In the second half Bart's again dominated the play at first but superior fitness and good tackling enabled the R.M.A. to withstand the attack.

Team: J. Robson, S. Harris, J. E. Stevens, M. Britz, N. Birbridge, J. K. Bamford, C. A. C. Charlton, B. O. Thomas, M. Jennings, A. T. S. Knox, G. Halls, J. Hamilton, D. Richards, L. R. Thomas, A. R. Kilroy.



FOOTBALL

1st XI v. Ealing Association Reserves (A.F.A. Junior Cup) Saturday October 3rd, Drawn 0—0 (after extra time).

This is the first season that the club has entered for this cup and we met strong opposition in the first round. In the first half Bart's had most of the game, though the attack, due perhaps to an early injury to Philips, seemed to lack finishing power. The defence, especially Juniper, played well and Davis was safe in goal. In the second half, only the ability of the Ealing goalkeeper saved them from defeat at the hands of Prosser and Philips.

Team: J. Davis, G. Haig, F. Amponsah, B. Perris, C. Juniper, D. Prosser (capt.), L. Iregbulem, M. Waterworth, B. Hore, M. Philips, J. Kuur.



VICTORIOUS LADIES

One feels that the capture of the U.H. Cup by the Ladies' Tennis Club should receive more than a passing congratulation. The cup has been in existence for five years, and has always been held by St. Mary's Hospital. To hold both the U.H. Ladies' Hockey and Tennis trophies, the second after defeating the holder for the previous five years, not only adds to the women students' prestige, but also to that of the Hospital as a whole.

Book Reviews

SOCIAL WORK IN TUBERCULOSIS

By Margaret Colart, Helen Raine and Elizabeth Harrison. Published by The Chest and Heart Association. Price 12s. 6d.

Miss Colart has been Head Almoner of the Brompton Hospital for many years and in this book she offers others the benefit of her wisdom and experience. The book is simply and interestingly written and illustrated throughout with examples which make it lively and easy to read.

It is intended mainly for social workers and starts with a simple exposition of the medical factors of the disease, the types of treatment given, and the possibilities of cure and relapse.

Miss Colart then discusses with deep understanding some of the social problems which the patient may have to face, according to his personality, family, and economic background, and some of the ways in which anxiety manifests itself in these patients. She gives detailed information of all the services available and stresses the value that prompt practical help can give, not only for its own sake but in helping to establish a good supportive relationship with the patient. The degree of support each patient needs varies greatly with his ability to cope with the knowledge that he has the disease and to face the long and disciplined treatment. She covers all aspects of illness from diagnosis through treatment and convalescence to rehabilitation and return to as near normal life as possible.

These chapters would be of great interest to students generally, many of the experiences covered being common to patients suffering from any serious illness.

The final chapters consist of an account of the way in which tuberculosis services were started in this country and their evolution to the present day. The statutory and voluntary services are enumerated in detail.

The book "aims to describe some of the personal and economic stresses which often accompany an experience of pulmonary tuberculosis, and how the methods and resources of social service in Britain can help individual patients to deal with them". It very successfully satisfies these aims.

A HISTORY OF THE MAIDA VALE HOSPITAL FOR NERVOUS DISEASES

By Anthony Feiling. With a foreword by Sir Ernest Gowers. Butterworth, 1958. 68 pp., 12 plates. 15s.

Founded in 1866 by Julius Althaus (1833-1900) as The London Infirmary for Epilepsy and Paralysis with Althaus as physician and Alexander Urs as surgeon, the famous hospital has had many eminent persons on its staff. Only outpatients were treated at first, but in 1868 a small number of in-patients were admitted, and a matron was appointed. Here in 1884 Sir Rickman Godlee performed the first operation for the re-

moval of a tumour of the brain, his description of the operation as recorded in *The Lancet* being reprinted in this volume.

A new hospital building was opened at Maida Vale in 1903, but was not completed until ten years later, and in 1936 it was renamed the Maida Vale Hospital for Nervous Diseases. After the war it was amalgamated with the National Hospital and the Institute of Neurology. This small book is a very brief record of the history of an outstanding institution, and contains photographs and lists of members of the staff, among whom we recognise several Bart's men. Unfortunately there is no index.

J.L.T.

MODERN SURGERY FOR NURSES

(4th edition)

by F. Wilson Harlow, M.B., F.R.C.S. (Eng.).

Published by Heinemann Price 30s.

It is easy to find the reasons for the popularity of this surgical textbook, which has had four new editions in eleven years. Though a large book (880 pages) it opens invitingly to display a clear text and a very good series of illustrations, ranging from photographs of clinical conditions and procedures to X-rays, diagrams, and drawings of instruments and equipment. It is encyclopaedic in its scope, and there must be few surgical topics on which a nurse might ask for information which are not mentioned here. Plenty of advice and help is given on nursing care, though not all of it will be accepted without reservation (e.g. the suggestion on page 504 that paralysed patients should be kept warm with hot water bottles).

All subjects in which change is rapid, such as antibiotic therapy, have been brought up to date. The section on insulin (page 831) has not been modernised, and should receive attention in the next edition, which will doubtless be needed fairly soon.

W. E. HECTOR.

PRINCIPALS OF MEDICINE FOR NURSES

By David Weitzman, M.D., M.R.C.P.
(Published by Faber & Faber, price 21s)

This book expressly produced for nurses and covering the syllabus set by the General Nursing Council, has a clean and straightforward style, with the exclusion of irrelevant detail.

The first two chapters on the causes and general features of disease are a carefully summarised introduction to the rest of the book, while a later chapter contains useful information on the social aspects of diseases.

It is well illustrated with excellent photographs and accompanying diagrams.

The book contains a clear index and a glossary which supplies all the necessary information.

Nurses approaching their State Registration Examination will appreciate the excellent information supplied in this book.

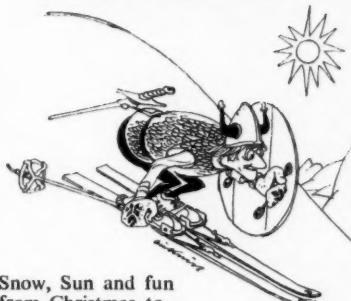
E. M. HARRISON, S.R.N.

RECENT PAPERS BY BART'S MEN

- *ABRAHAMS, Sir Adolphe. Stitch in the side. *Practitioner*, 182, June, 1959, pp. 771-772.
- BADENOCH, A.W. Carcinoma of the bladder. *Practitioner*, 182, June, 1959, pp. 711-718.
- *BANKS, T. R., TUPPER, R., WHITE, E. M. A., and WORMALL, A. Micro-determination of zinc in blood and other tissues by neutron activation analysis. *Biochem. J.*, 71, 1959, p. 21P.
- *BARTHOLOMEW, M. E., TUPPER, R., and WORMALL, A. The intracellular distribution of ^{65}Zn in normal and tumour tissues after its injection into mice. *Biochem. J.*, 71, 1959, p. 15P.
- BATTEN, L. W. Psychosomatic disorders in children. *Brit. med. J.*, April 25, 1959, pp. 1109-1110.
- *BETT, W. R. Doctor who created Sherlock Holmes: Sir Arthur Conan Doyle (1859-1930). *Nursing Mirror*, 108, May 22, 1959.
- *—. The endemic colic of Devonshire. *Monthly Bull.*, 30, June, 1959, pp. 90-95.
- . Gustav Paul (1859-1935) of "Paul's Test". *Med. Offr.*, 101, Feb. 20, 1959, p. 111.
- *—. Haffkine Institute, Bombay: Diamond Jubilee. *Nature*, 183, March 14, 1959, pp. 725-726.
- . Mr. Cyril Barnard (obituary). *Nature*, 183, April 25, 1959, p. 1159.
- BOURNE, Geoffrey, and WEDGWOOD, John. Heart-disease and influenza. *Lancet*, June 13, 1959, pp. 1226-1229.
- BUCKLE, Richard M. Fluoxymesterone: a new oral androgen. *Brit. med. J.*, May 30, 1959, pp. 1378-1382.
- BUTLER, H. An early blastocyst of the lesser bush baby (*galago senegalensis senegalensis*): a preliminary account. *J. Anat.*, 93, April, 1959, pp. 257-261.
- *CAPENER, Norman. British orthopaedics. *Lancet*, May 9, 1959, pp. 951-953.
- *CASSON, P. R. C. The work of Kurt Hahn. *Int. J. soc. Psychiat.*, 4, 1959, pp. 197-203.
- *CAVE, A. J. E., and PORTEOUS, C. J. A note on the semi-membranous muscle. *Ann. roy. Coll. Surg. Engl.*, 24, April, 1959, pp. 251-256.
- CUNNINGHAM, G. J., (and Winstanley, D.P.) Hyperplasia and metaplasia in the bronchial epithelium. *Ann. roy. Coll. Surg. Engl.*, 24, May, 1959, pp. 323-330.
- , (and others). Studies of the carcinogenic action of tricycloquinazoline. *Brit. J. Cancer*, 13, March, 1959, pp. 94-98.
- *DALY, M. de Burgh, (and Luck, C. P.). The effects of adrenaline and noradrenaline on pulmonary haemodynamics with special reference to the role of reflexes from carotid sinus baroreceptors. *J. Physiol.*, 145, Jan., 1959, pp. 108-123.
- DAVIDSON, J. K., and others. Radiological demonstration of enlarged retroperitoneal lymph-nodes. *Lancet*, May 16, 1959, pp. 1008-1010.
- *DAY, George. The tardy convalescent. *Brit. med. J.*, May 2, 1959, pp. 1178-1182.
- *DISCOMBE, George. Flocculation tests. *Lancet*, May 16, 1959, pp. 1005-1008.
- EVANS, Frankis T. The anaesthetist's bag. *Practitioner*, 182, June, 1959, pp. 769-771.
- FENTON, J. C. B., see, HAVARD, C. W. H., and —.
- FLETCHER, C. M., (and others). Sputum examination and the investigation of "chronic bronchitis". *Lancet*, June 13, 1959, pp. 1241-1244.
- *GARROD, L. P. The chemoprophylaxis of gas gangrene. *J. roy. Army Med Corps.*, 104, 1958, pp. 209-215.
- *—. Chemotherapy of infections of the urinary tract. 1959.
- *—. Common errors in treatment with antibiotics. *Digestive Antibiotica*, Nr. 3, 1958.
- *—. The practical significance of sensitivity tests. *Report 3rd Cong. clin. Path., Brussels*, 1957, pp. 129-139.
- *—. Some difficulties in the sterilisation of surgical equipment. *Becton, Dickinson lectures on sterilisation*, 1st ser., 1957, pp. 7-14.
- *HANCOCK, P. E. Thompson. Reticulo-endothelial system. In, Raven, R. W., ed. *Cancer*, vol. 4, 1958, pp. 412-441.
- HAVARD, C. W. H., and FENTON, J. C. B. Clinical evaluation of hydrochlorothiazide. *Brit. med. J.*, June 20, 1959, pp. 1560-1565.
- , see also DAVIDSON, J. K., and others.
- *HOPPER, P. K. Investigations on neutralising antibody to canine distemper virus in human serum from different countries. *Acta paediat.*, 48, 1959, pp. 43-49.
- *HOWELL, Trevor H. Complications in cerebral thrombosis. *Med. Press.*, 241, June 3, 1959, pp. 490-494.
- *HOWKINS, John. Synchronous combined abdomino-vaginal hysterico-colectomy for cancer of the cervix—a report of fifty patients. *J. Obst. Gynaec. B. E.*, 66, April, 1959, pp. 212-219.
- *HUNTER, Richard A. Some notes on the importance of manuscript records for psychiatric history. *Archives*, 4, 1959, pp. 9-11.
- JONES, F. Avery (and others). Alimentary bleeding of obscure origin: a follow-up study and commentary. *Brit. med. J.*, May 2, 1959, pp. 1138-1142.
- KEELE, K. D. The genesis of Mona Lisa. *J. Hist. Med.*, 14, April, 1959, pp. 135-159.
- *KEYNES, W. Milo. Teratoma of the neck in relation to the thyroid gland. *Brit. J. Surg.*, 46, March, 1959, pp. 466-472.
- *LETANG, H. E. J. Some observations on the Black Formosa Corruption and Tapanuli Fever. *Sherlock Holmes J.*, 4, Spring, 1959.
- *LUMB, George, (and Shacklett, R. S.). The cardiac conduction tissue and its blood supply in the dog. *Surgical Forum*, 9, 1959, pp. 261-265.
- *—, (and Shacklett, R. S.). The results of occlusion and narrowing of coronary arteries in the dog. *Proc. Fed. Amer. Soc. exp. Biol.*, 18, 1959, p. 491.
- *—, (and others). Coronary flow related to cardiac conduction. *Proc. Fed. Amer. Soc. exp. Biol.*, 17, 1958, p. 447.
- *—, (and others). Jaundice occurring in a patient treated with chlorothiazide. *New Engl. J. Med.*, 259, Sept. 11, 1959, pp. 534-536.

- MOURANT, A. E. Blood groups: introduction. Blood groups and anthropology. *Brit. med. Bull.*, 15 May, 1959, pp. 89-91; 140-144.
- *NASH, D. F. Ellison. Abdominal hernia. *Hosp. soc. Serv. J.*, 69, March 20, 1959, p. 291.
- . Ano-rectal disorders. *Hosp. soc. Serv. J.*, 69, March 13, 1959, p. 271.
- . Goitre. *Hosp. soc. Serv. J.*, 69, March 27, 1959, p. 315.
- . Organisation for surgery. (i), (ii). *Hosp. soc. Serv. J.*, 69, May 1, 1959, p. 441; 469.
- . Pain: its meaning and its relief. *Hosp. soc. Serv. J.*, 69, March 6, 1959, pp. 236-7.
- . Surgical economy (i), (ii), (iii). *Hosp. soc. Serv. J.*, 69, April 10, 17, 24, 1959, pp. 359; 385; 413.
- *OSWALD, N. C. Clinical aspects of chronic bronchitis. *Brit. J. Radiol.* 32, May, 1959, pp. 289-290.
- *PARTINGTON, M. W. An English family with Waardenburg's syndrome. *Arch. dis. Childh.*, 34, April, 1959, pp. 154-157.
- . (and Quinton, J. F. P.) The pre-eruptive illness of measles. *Arch. dis. Childh.*, 34 April, 1959, pp. 149-153.
- PORTEOUS, C. J., see, CAVE, A. J. E., and —.
- *POSEL, M. M. The use and abuse of bed rest. *Medical Proceedings*, 5, May 2, 1959, pp. 191-193.
- RACE, R. R., (and Sanger, Ruth). The inheritance of blood groups. *Brit. med. Bull.*, 15, May, 1959, pp. 99-109.
- REES, E. G., see, SCOTT, A., and —.

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- , (and Coombs, R. R. A.). The antiglobulin reaction. *Brit. med. Bull.*, 15, May, 1959, pp. 113-118.
- ROWNTREE, T. Congenital rectal prolapse. *Proc. roy. Soc. Med.*, 52, May, 1959, pp. 388-389.
- SARMA, Vishnu. Chondrodystrophy (achondroplasia) of the foetus in obstetrics. *Brit. J. clin. Pract.*, 13, June, 1959, pp. 409-414.
- *SCOTT, A. The behaviour of radioactive mercury and zinc after application to normal and abnormal skin. *Brit. J. Derm.*, 71, May, 1959, pp. 181-189.
- *—, and REES, E.G. The relationship of systemic lupus erythematosus and discoid lupus erythematosus. *Arch. Derm. Syph.*, 79, April, 1959, pp. 422-435.
- SCOTT, R. Bodley, *see*, DAVIDSON, J. K., and others.
- *TAYLOR, M. G. The influence of the anomalous viscosity of blood upon its oscillatory flow. *Phys. in Med. Biol.*, 3, Jan., 1959, pp. 273-290.
- THORNE, Napier A. The skin clinic. *Brit. J. clin. Pract.*, 13, June, 1959, pp. 454-456.
- TUPPER, R., *see*, BANKS, T. E., and others.
- , *see*, BARTHOLOMEW, M. E., and others.
- WALKER, Kenneth. Christ and Freud. *Med. World*, 90, June, 1959, pp. 573-575.
- *WATERWORTH, Pamela M. Spurious growth inhibition by antibiotic discs having a lactose base. *J. med. Lab. Technol.*, 15, Oct., 1958, pp. 245-248.
- *WEBER, F. Parkes. *Miscellaneous notes (second series)*. 1959.
- WEDWOOD, John, *see*, BOURNE, Geoffrey, and —.
- WHITE, E. M. A., *see*, BANKS, T. E., and others.
- WHITTLE, R. J. M. An angiosarcoma associated with an oedematous limb; a case report. *J. Fac. Radiol.*, 10, April, 1959, pp. 111-112.
- WORMALL, A., *see*, BANKS, T. E., TUPPER, R., WHITE, E. M. A., and —.
- , *see*, BARTHOLOMEW, M. E., TUPPER, R., and —.

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